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C. N. JOHNSON, M. A., L. D. S., D. D. S.
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PARADENTAL CYSTS.*

BY ANGELO CHIAVARO, D. D. S., ROME, ITALY.

GENERALITIES.

A cyst is a cavity, either natural or newly formed, filled with a material more or less fluid or pulpaceous, and surrounded by an investing membrane or capsule, which separates it from the surrounding tissues.

As the dental cysts belong to tumors of dental origin of the maxillary bones and are found in connection with the permanent, supernumerary and deciduous teeth, so we think the modern dentist should have clear scientific knowledge of this important chapter of pathology, because of its relation to the dental system. The dental cysts have been called dentiferous, dentigerous, follicular, embrioplastic, odontoplastic, serous, dentoalveolar, periosteal, radicular, dento-radicular, etc. We divide the dental cysts into two classes: congenital, if they are in connection with the anomalous development of teeth, and non-congenital or radicular, if they are the result of diseases of the teeth after their eruption. The adjective dentigerous is erroneous, because it signifies that the cyst has generated the tooth, while in fact it is the reverse.

As we will explain later, the dental cysts are generated by the proliferation of epithelial debris (residuum, remains), which normally are found around the tooth, or paradental tissues, so we think it better to call them paradental cysts to indicate their origin. The paradental cysts, congenital or noncongenital, may be found to be formed of only a single cavity or of many cavities, that is to say they could be unilocular or multiocular. Some paradental noncongenital unilocular cysts remain small and have a special clinical evolution, and are attached to the apex of the root as an appendix; they are called appendicular. In conclusion we divide the paradental cysts into congenital and noncongenital or radicular and both may be uni or multilocular. The noncongenital unilocular, if they remain very small, are called appendicular.

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*Read before the American Dental Society of Europe, Rome, 1907.

HISTORY.

We divide the history of paradental cysts into six periods. The first, which embraces the period to 1727 can be called a period of confusion, because all surgeons did not make distinction between paradental cysts and other tumors of the jaws. The first author who made some distinction is Scultet (1654), but he did not know the relation of paradental cysts to the dental system.

The second period ends with 1816. The great Fauchard in 1728 described some liquid tumors of the jaws, which were in connection with dental apparatus. Runge (1750) was of the same opinion and he, and not Dupuytren, as generally believed, was the one who noticed the phenomena of parchment like crepitation. Later Bordenave, Cooper-Hankins, Jourdain, Morelot, Hunter and Duval (1768-1812) described some cases of paradental cysts; while Brodie, Cooper, Kirklan and Callisen mix the cysts with the diseases of the antrum.

In the third period (1816-1838) begins the search for the genesis of these tumors and the authors, as Delpech (1816), Boyer, Dubois and Marjolin (1818) believe that they are produced from the dental pulp or from the nervo-vascular cord.

The fourth period (1839-1846) is important for the scientific character of the history in regard to the pathogenesis of the paradental cysts and at the end of this period the authors give a great consideration to the dental development as the cause of the cysts formation, and for the first time multilocular cysts are described. There are very important works of Dupuytren (1834-1839) and Diday (1839). We find at the same time some descriptions of cases of paradental cysts by Blasius (1835), Lombard (1836), Syme (1838). Velpeau (1847) and Nelaton (1853) do not add anything new to the knowledge of that time, but Forget (1840) writes a remarkable work and believes that dental caries has the largest influence upon the paradental cysts, beside incidental influence which the evolution of the dental system may have. Szokalski (1844) wrote a pamphlet on this subject believing that the paradental cyst is formed by distention of the peridental membrane for pus formation.

The fifth period includes the years from 1847 to 1862. The authors of that time believed in the strict relation between paradental cysts and the dental system or its evolution. The cysts were classified according to their origin from the periodontal membrane of the root or from the dental germ, but there was believed to be also a special class of the paradental cysts independent of the dental system. In this time are written the works of Guibout (1847) and Duchassoy (1859).

The sixth period, from 1863 to our time, is the most important and the progress of dental embryology helped a great deal to secure exact knowledge of the pathology of these tumors. In France Broca, Verneuil, Guillaume, Duplay, Reclus, Magitot, Aubertin, Chiron, Aussenac wrote important articles upon the subject and all believe that these tumors are the product of disturbances in the evolution of the dental germ, but in spite of the authority of such writers, there were some authors who did not believe that the cysts of the jaws were produced by alterations of the dental system and among them are Giraldés, Guyon, Barbat, Reynaud, Dolbeau, Jacquelin, Després, Follin & Duplay, Forget, Heuel, Kirmisson and others. At the same time Malassez opened a scientific polemic against Magitot, trying to prove that paradental cysts were the result of irritation of the paradental epithelial remains. Magitot was upheld in his theories by David and Bouvet, but the theory of Malassez secured the advantage and a good many scientific men like Albarran, Jean, Vénassier, Pomme de Mirimonde, Dreyfus, Bouyssou, Reclus (1899-1903), and many more were of Malassez's opinion.

Not only in France were the scientific men interested in the subject, but in fact we find very interesting works written by Mikulicz, Busch, Kolaczek, Eve, Heath, Falkson, Turner and others. In Italy almost all the authors accepted the theory of Malassez, and it was confirmed by the studies of Chiarella, Zatti; Remedi, Cassanello and Oberti (1889-1904), Ferrari, Monguidi, Biondi and Catterina were of different opinion.

MORBID ANATOMY.

Paradental Congenital Unilocular Cysts.—They are frequent, both in the superior and inferior jaws. The cyst in its development must find place in the tissues of the bones, so that gradually it removes the bony walls by a process of atrophy. The bony tissue for some time is renewed by the formative activity of the periosteum mechanically stimulated; but later the periosteum under a strong and continued pressure by the increasing internal tension loses its osteogenetic property and the cavity enlarges, the bony walls are destroyed and the tumor is covered only by soft tissues, so that in the first period the cyst is a hard tumor, afterward the walls are flexible and at last soft and fluctuant.

The congenital cysts have a very variable situation: sometimes they are found near an eteropic tooth; sometimes on the palate; sometimes on the ramous of the maxilla, etc. They contain a liquid, often clear, but thick and mucoid, or brown, or milk or honey-like and sometimes look like an agglomeration of fishes' eggs. The chemical analysis gives the following results: colasterine, serous-albumen and serous-globuline. So that there is proof of the absence of grises, mucus and colloides; the cystic wall is thin and flexible and can be peeled off from the bony wall. Internally the surface is rough and there are some *papillae*. In this surface is implanted the tooth or the teeth with undeveloped roots, but with fully developed crowns. There can be found also a great number of small teeth or rudiments of teeth. Usually the cyst contains only one tooth, but in some cases there has been found even twenty-five small teeth.

Histologically the cystic membrane is composed of two *strata,* one external and one internal: the first is of connectival tissue, the second of epithelial nature. The connective stratum is formed by embryonic tissue with a good many bloodvessels; the epithelial stratum is formed by a stratified pavement epithelium, with intercellular filaments of union.

When the paradental congenital cyst is small, the walls of it are of the thickness of about three millimeters, but it does not contain any liquid. Such a cyst looks like a noncongenital appendicular cyst. The large cyst, on the contrary, has very thin membranous wall. On the surface there are to be found, if they are present, the included teeth. But sometimes we find only rudiments of teeth or unformed masses of enamel and dentine; sometimes we find dentine which looks like sand. When there is a tooth the crown is in contact with the liquid of the cavity, such teeth usually are abnormal, the crown is small, deformed, rough; they are placed in all directions, sometimes even upside down. The roots are rudimental without radicular canals and at times they are absent. There have been found molars with the character of permanent teeth, sometimes there are teeth of the first dentition. There are cases described of paradental congenital cysts containing all kinds of teeth. The membraneous walls of the cysts are in contact with the bony tissue; in the upper jaw the cysts developing in the incisal region, gradually protrude in the nasal *fossae* and also on the external alveolar wall. Enlarging the cysts may entirely close the nostrils and the inferior cornea may be pushed up very high.

The cysts developing in the canine region of the upper jaw, the external wall being very thin, protrude in the fossa canina, but if they get larger, they may occlude the corresponding nasal fossa and occasionally they may enter the antrum, especially when the apex of the canine corresponds to the angle formed by the anterior and internal wall of the antrum with the floor of the same. The cysts developing in the upper bicuspid region project externally, but sometimes when they are near the floor of the antrum they project in to it. Occasionally the cysts of the anterior teeth and bicuspids may project on the palate, but in such cases they are in relation with an eterotopic tooth. All the paradental cysts in connection with the molars project always in to the antrum. Of course the cysts generated near an eterotopic tooth may be found in other places than those above mentioned, as, for example, at the orbital margin in the maxillae remus, etc. In the inferior jaw the cysts project usually on the external surface, the external being the thinner wall. When the cyst enlarges, the nerves and vessels of the internal canals are pushed aside and the bony wall destroyed, so that the cyst is covered only by soft tissue.

Paradental NonCongenital Unilocular Cysts.—The connection of these cysts to the surrounding bony tissue is the same as the above described unilocular congenital cysts and also their development. Usually they are as large as a nut, but Albert describes a case of a noncongenital unilocular cyst as large as the head of a man. Exceptionally they are multilocular. The liquid may be clear and ropy or bloody; usually is sero-purulent. Sometimes the liquid is very thick, even as thick as butter, on account of the presence of fatty granulations and epithelial cells. The histological structure of the small ones is the same as of the large, only the walls of the small cysts are very thick. The superficial strata of the walls are formed of many fibrillar lamellae, which are parallel to the surface of the tumor, and they are in connection with the pericementum. Deeper the connective tissue is rich in cellular elements and vessels; the cystic cavity is lined by a membrane of epithelial tissue from which epithelial cells in form of cordons and projections go to the deeper strata; if the cyst is suppurated the epithelial stratum is wanting.

Noncongenital Unilocular Appendicular Cysts.—This kind of cysts in fact are not all cystic; that is, the cavity of some of them is not real, but filled with proliferations. They have a peariform aspect and are not any larger than hazel nuts, but usually as large as a pea. They are attached to the apex of the root directly or by the means of a peduncle; the apex is rough and atropic. If a cystic cavity exists it is filled with a small quantity of thin purulent liquid.

Multilocular Cysts.—The structure of the multilocular cysts, congenital or noncongenital, is the same, only the congenital contain teeth or rudiments of them and the noncongenital do not, but are in connection with the root of the decayed tooth or with the alveolum, if the root does not exist any more. The multilocular cysts are more frequent in the lower jaw. Sometimes they are as large as the head of a child.

Macroscopically the tumor on its surface is knotty, irregular and with alternations of soft and hard areas. Generally in the interior there are two or three large principal cavities and many other small ones. The cavities are divided by septi more or less thick and more or less complete, and sometimes they are so numerous that they form the principal constituents of the tumor. The septums when they are strong and thick, have their bases attached to bony projecting lamellae of the walls. Microscopically the principal part of the tumor is composed of a fibrous tissue, which contains cellular elements and bony lamellae. The epithelial projections like cords or tubes are also present in the connective tissue of the tumor. The epithelial cells are of pavemental and adamantine type. Some of the epithelial masses are formed of poliedric flat cells. The adamantine type is formed by a series of cylindrical cells, which circumscribes a mass of irregularly situated cells with large nucleus, or some fusiform or star-like cells with anastomosis. The adamantine type of these projections may have externally a stratum of enamel. Large or small the multilocular cysts in their structure are the same; but in the large ones the cells of the internal epithelial stratum are more flattened.

The connective stroma of the tumor is fibrous, not rich in nucleus and very rarely of embryonal type. The vessels are few and small. The epithelial projections are embedded in this connective stroma, which sometimes is *pars magna* of the tumor and sometimes is not. The epithelial masses are always well divided from the connective tissue by one or two strata of cylindrical epithelium. Some of those projections have the internal cells with large nucleus and anastomosis and they form something like the enamel organ. The central cells easily degenerate, so that we find spaces which unite with each other forming a larger cavity filled with a fluid; in this way there are formed the cavities of the multilocular cysts.

PATHOGENESIS.

In explanation of the formation of the paradental cysts we have had many theories advanced and endowed by very proficient men and we will give a resumé of some of them, before describing the one which we think is the best.

Periosteal Theory.—Magitot thought the noncongenital and appendicular cysts were the result of slow inflammation of the dento-alveolar periosteum, which would be pushed away gradually by the formation of dental fluid. The occlusion of the root is necessary, normally by the presence of the pulp, or pathologically by new formations, or by filling. The internal epithelial membrane by Magitot would have a direct genesis. But when the impossibility of the spontaneous genesis of the tissue was proved he thought that the epithelium of the cysts was derived from an especial stratum normally situated between the cementum and periosteum, but the existence of such a stratum has not been proven. For the congenital unilocular cysts he accepted the follicular theory of Broca. He confused the congenital with the noncongenital multilocular cysts and gave a wrong explanation for their genesis, believing that they were produced by some dental germs becoming cystic, which would unite together or by the sepimentation of a cystic dental germ. Secondly we cannot admit that inflammation can produce a cyst, or that the connective tissue could generate the internal epithelial stratum of a paradental cyst.

Follicular Theory.—This is Broca's theory. He admitted three varieties of cysts and all should take origin from the enamel organ. First. The embryoplastic cyst which takes place before the formation of the dental tissue and does not contain teeth nor rudiments of them. Second. The odontoplastic cyst which may originate during the formation of dental tissue contains rudiments of teeth. Third. The coronal cyst which originates when the crown is formed. The presence of many teeth in one cyst is due to the fusion of several cystic dental germs or to the sepimentation of the single germ. This theory can not be true, because a dental cyst does not look like a dental germ and because they have found cysts with many more or less developed cavities superior to the number of dental germs in one jaw.

Theory of Aguilhon de Sarran.—This author has found that there are thirty or forty small vessels entering the root apex, which vessels after pulp necrosis would become dry and would hang to the apex resembling a camel's hair brush. They would act as a foreign body and stimulate the surrounding tissue forming a cyst. The cystic epithelium would be produced by the vessel endothelium. This theory has the same value of that advanced by Magitot, as endothelium can not produce epithelium.

Theory of Guyon.—Guyon admitted the Broca's theory for the patho-genesis of the small cysts, but for the large ones he thought that they are due to the slow process of atropic osteotitis around an impacted tooth which acts as a foreign body. Of course he can not explain how it is possible that a slow process of osteotitis could produce the epithelial lining of the interior of the cyst. Beside that this last tooth theory can not explain the fact of the recurrence and can not explain how it was that in some cases it has been found that the tooth which acted as a foreign body was not in communication with the cystic cavity.

Theory of Included Gingival Epithelium.—This theory was given by Verneuil and endorsed by Reclus, Eve, Heath, Busch, Mikulicz and others. They thought that multilocular cysts were not of dental origin, but were due to invaginations, projections or inclusions of the gingival epithelial strata during the first formation of teeth. Gingival invaginations if stimulated by inflammation would degenerate in cysts. Such theory could not explain how some cysts could be formed in the central of the lower jaw, while the gingival epithelium remains normal. And why the same gingival inclusions should sometimes produce congenital cysts which contain teeth and sometimes non-congenital ones without teeth or rudiments of them? Gingival inclusions are never found in normal jaws.

Theory of Paradental Epithelial Remains.—We know from the odonto-genesis that an embryonic gingival epithelium after being introflected into the connective tissue, by proliferations and complicated changes forms the enamel of the temporary teeth and that of the permanent ones. We know also that neither all the epithelial cells enter into the formation of the enamel organ, nor after their function do they disappear entirely: some of those cells we know remain as included debris in the connective tissue. This fact is proved microscopically and we understand then that if the young epithelial remains are abnormally stimulated by occasional causes, surely they could produce dental cysts. This fact would enter in the general law of the production of all the tumors of epithelial origin, as in 1874 stated for the first time by Prof. F. Durante, director of the Royal Chirurgical Clinic.

One year after, in 1875, Cohnheim in Germany published the same theory. In this work Professor Durante says: "It is possible that embryonal elements of any class of tissue could remain in embryonic state and they in the adult organism could be the cause of the hidden predisposition. Such elements remain included in the tissue after they are developed, for years and years, without giving any trouble, but if they are irritated or stimulated in some way they will be brought into a state of activity and that biological property which heat excites in the elements of the volatiles germinative macula which remained in state of rest since the egg was expelled from the cloaca. In fact, if we think how complicated should be the disposition of the tissue from which are originated some neoplasms, we must admit that their genesis is due to the reproduction of complete embryonal actions, made by cellules which have the necessary anatomo-physiological properties."

The application of this theory to the development of paradental cysts is due to Malassez and later to Albarran. In fact Malassez proved with microscopical studies which he undertook in 1884 and ended in 1888 that anatomically some groups or masses of epithelial cells exist included in the connectival tissue, which surrounds the cementum and with scientific arguments aided by clinic facts proved that from this epithelial rests are originated all the different forms of paradental cysts. The normal epitheliums which are found in the embryo between two and six months were divided by Malassez in three groups: one superficial of Malpighian type, just below the gingival epithelium; the other deeper is connected with the surface of the enamel organ and it is composed of poliedric elements with anastomosis; and the third group comprehend the enamel organ and its proliferations.

All these epithelial masses are inclined to pass from the Malpighian type to the adamantine. Functionally only a small number of them are useful to the dental evolution; in fact only those elements of the enamel organ have a productive function and the other elements have no function at all and belong to the aberrant formations.

Malassez found epithelial cells inside to the gubernaculum dentis. The dental cords of the primitive dental germs are not entirely absorbed, but they remain as paradental rests.

In conclusion, after the development of the temporary teeth and their eruption their roots are surrounded by epithelial rests of the enamel organ. The permanent tooth on its way during the eruption passes through the gubernaculum dentis in the middle of those epithelial masses which after it is erupted surround its roots.

Microscopical cuts of roots of permanent teeth show in the legamentum some epithelial masses, which, it seems, embrace like a ne the entire root. These epithelial masses are of different form. The cells of them are generally poliedric, small and strong, with large nucleus and little quantity of protoplasm; with the picro-carminium they are stained in dark red like an epithelial cell. Dr. Black found also these epithelial cells. Collaud of Geneva and Hopewell-Smith of London have corroborated this fact.

The appendicular cysts are derived from the deepest epithelial rests which are the residue of the enamel organ which is derived from the gingival epithelium; in fact the type of the epithelial membrane lining cavity of such cysts has the Malpighian type with tendency to the adamantine. The noncongenital unilocular cysts really are the enlarged appendicular cysts; in fact being of same genesis they are the same structure, only they are larger. The congenital cysts not necessarily must have an included tooth, while we have a good many included teeth which do not produce any cyst; they are originated by paradental epithelial rests which are in the neighborhood of the included tooth. If they are stimulated they produce a cyst, originally away from the tooth, but when the cyst gets larger, then part of the wall gets near the tooth, which pierces the wall and then the tooth remains included.

The chief characteristic of the multilocular cysts is their tendency to resemble a tissue similar to the enamel organ. These tumors develop in the central part of the jaw where the only epithelial rests are those described by Malassez outside of the paradental membrane, which are situated in some lacunae of the alveolar bone. Such rests are derived from proliferations of the enamel organ, so that if stimulated, they reproduce the forms of the original organ to which they belong, and in fact they look like enamel organs at their initial formation.

The recurrence of the paradental cysts after they are removed is due to the fact that the tumor was not entirely eradicated. But the new tumor could be originated also by new epithelial paradental remains. Sometimes in fact the recurrent cyst is different from the first and in fact unilocular congenital or noncongenital cysts have given a recurrent multilocular cyst.

The epithelial or cancerous degeneration can be easily explained by admitting that the epithelial lining of the cyst or the contiguous epithelial paradental debris produce epithelial proliferations in form of tubes, cordons or alveolar masses. The fact that the paradental cysts could degenerate into cancer is a good proof of Malassez's epithelial theory.

ETIOLOGY.

Heredity and sex have no influence on the production of the paradental cysts, but the age is important, because the congenital cysts are frequent during the dental evolution. In fact after thirty years they are exceptional. The noncongenital cysts can be found at any age. They are in connection with dental diseases and this is the only point which can be called sure. But while the dental diseases are so common the paradental cysts are not. We think that traumatism or dental diseases act on the paradental epithelial debris with success only when they still retain some activity, but we must admit that the activity in such paradental inclusions usually is extinguished and occasionally only suspended.

SYMPTOMATOLOGY.

The symptoms of the paradental cysts are in relation with the volume.

Appendicular Cysts.—The majority of the authors think that diagnosis of the appendicular cysts is impossible. We do not think so in spite of the fact that in extracting a root we may find hung to the apex an appendicular cyst, which we did not expect, because it never gave especial sign of its existence in a mouth which was in an unhygienic condition. In such cases we at first sight judge that it is better to extract and do not pay attention to the symptoms, but if we did pay attention we could have made the diagnosis.

The principal symptom is the pain, similar to the chronic dento-alveolar inflammation, which in fact always coexist in a certain degree. The pain is local and reflex; the root is painful to percussion; the overlying gum tissue is slightly more red than normal, but is not painful to the touch; the root is very loose. A good symptomatic sign is afforded by the flowing of a sero-purulent liquid from the radicular canal and it can not be stopped by any means. The antiseptic canal dressing is useless. But such a fact is common also to canal perforations, but then the perforation can be detected, the root is not painful to the touch and a dressing with alum stops the discharge.

Unilocular Cysts.—Congenital or not, the unilocular cysts after reaching a certain volume do not excite any pain. They are equally common in both jaws. They usually are not any larger than a mandarin, but occasionally they can reach the volume of a child's head. According to its volume and consequently the more or less destruction of the bony wall, the palpation gives a sense of hardness or fluctuation or the peculiar parchment-like crepitation. In general they are not movable at their nares. The oral mucus is movable upon the tumor and is stasic. If the tumor has a fistula, caused usually by the extraction of the root *in causa,* the round form of the cavity and its dimension can be detected with an explorator.

The condition of the dental system is important. If the cyst is noncongenital, the teeth in connection with it are decayed and loose. If the cyst is congenital we must look for the trouble which caused it during the evolution of the teeth. We can find malpositions or absence of teeth. The disease is local and generally health is not injured. Some of the symptoms are in relation with the origin and seat of the cyst.

In the inferior jaw usually the cysts project externally and when as usually, they are in connection with the molars, they project at angle of the maxilla. In the upper jaw according to their seat they may project externally to a considerable degree or may not be detected if they project into the antrum. So that Scharff divided them into cysts of external, internal and mixed evolution.

Multilocular Cysts.—They are not common and usually they develop in the maxilla. The symptoms are similar to the large unilocular cysts, only their course is slower. They can reach an enormous volume even to the extent of a man's head. In such cases the symptoms are very important. The patient is cachexic on account of the impossibility of mastication, of denutrition and absorbment of toxins from the fistulas, which are always present. Respiration and deglutition can be disturbed and they may be entirely stopped, which of course causes death.

Course, Complication and Recurrence.—In general the paradental cysts have a slow course, the duration being from a few months to twenty years. They do not stop in their evolution, even if accidentally they have broken, which fact bring with it the formation of the fistula, from which flows a sero-purulent liquid. The cyst may suppurate from infection and if the suppurative process destroyed entirely the epithelial internal lining, the disease may spontaneously be cured. Internal cysts of the superior jaw may occlude one nasal cavity or by pressing on the orbital floor may disturb the vision and if accidentally it breaks in the antrum, it excites a very serious septic sinusitis, which if not promptly cured takes away the life of the patient. The cysts are subject to recurrence on account of their epithelial projections as described, they may recur as paradental cysts, as cancer or sarcoma. Such recurrences may happen after many years and they are very malignant.

DIAGNOSIS.

Appendicular Cysts.—The symptomatology described helps the diagnosis, but sometimes at the beginning when the walls are still very hard they can be mistaken for an osteum, fibroma, etc. The course of tumors and the anamnesis perhaps may help. The odontoma can be taken for a cyst in its first development, but it projects only on the alveolum equally on the external and internal surface of it while the cyst develops at a certain distance from the alveolar margin, and usually projects externally only. In case of doubt the exploration with a bur helps in the diagnosis. The gingival cysts which have a seat on the palate and on the gum may be as large as a nut, but they are localized externally to the maxillary bones, entirely movable on their bases and clearly fluctuant.

The malignant tumors as saccum, osteo-saccum, carcinoma could be confused with paradental cysts, but they uniformly project on both surfaces of the jays, the immediate glands are enlarged, at the first development of the tumor, the course is rapid, the tumor painful, the overlying skin hypersensitive and there is general cachexic aspect. Surely a doctor of dental surgery can not mistake a cyst with a dental abscess. On the contrary is very difficult to differentiate the diagnosis of sinusitis and an internal cyst which extends into the antrum. If the cyst is internal and not broken the differentiation can be made by exploring the antrum through the nasal opening; if there is a cyst in the antrum the exploration is impossible.

Differential diagnosis between congenital and noncongenital cysts is possible. The congenital cyst is very rare after the thirtieth year; abnormalities in the dental evolution stand for congenital cyst, especially if the teeth erupted are sound, while the noncongenital are in relation with the carious teeth and can be found at any age. The liquid usually is sero-purulent in the noncongenital and clear in the congenital cysts.

Multilocular Cysts.—The diagnosis of such cysts is difficult only at beginning, when the bony wall is thick, and could be mistaken for the osteoma, condroma, sarcoma, etc., but all we have said can be applied to the differential diagnosis.

Prognosis.—The prognosis of the dental cysts is in connection with their volume, but they are to be considered as benignant tumors.

TREATMENT.

Treatment.—The only rational treatment of the paradental cyst relies upon the complete destruction of the epithelial lining membrane.

Appendicular Cysts.—The extraction and replantation of the tooth after some days, cures the disease. Partsch and Weiser advise the amputation of the apex. Dr. Pont of Lyon advises the use of an iodo-iodurate solution with cataphoresis. We believe only in the extraction and replantation of the root if it is worthy.

The treatment of the large unilocular and multilocular cysts belong to general surgery, but the small ones can be treated by any dental surgeon and we prefer the following method: After a complete local anesthesia with eucaina-beta at 3 per cent or stovaine or still better with eudrenine, the root in connection with the paradental cyst is extracted. Then with strong scissors cut to the gingivo-labial or gingivo-buccal solcum with two divergent lines without going out of the mesial and distal interalveolar septums. If strong scissors are not at hand, cut the soft tissue to the bone and with a fissure bur cut the outside bone covering of the cyst following the above lines. So we have a triangle with the vertex to the alveolar margins and the base to the vestibular solcum. The bony mucous flap is then to be excised; in this way we have secured entrance to the cystic cavity and then with a spatula if it is possible the cyst is to be enucleated and if it breaks then it should be curetted and afterward all the internal surface burned with the thermo-cautery, which should be used also for the margin of the opening, so that it will not close rapidly. Paint the cavity with iodine and insert inside a rubber drainage, through which antiseptic irrigations should be made daily. Some advise to pack the cavity with iodoformic or salol gauze, then the irrigations must be done before the packing. After eight or ten days the sero-purulent flux will stop, a cure will be effected within a month.

If the tooth is worthy to be saved, the opening will be made above the root apex if the individual anatomic condition will permit. The rest of the treatment is just the same as above described.

For the large cysts especially of the lower jaw it is necessary sometimes the resection or even the disarticulation of an entire maxilla and it is in such cases that the aid of dentistry is most efficient and successful with the maxillary prosthesis. The best application of dental prosthesis we owe to Dr. Claude Martin of Lyon.

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INSTRUMENTS, INSTRUMENTATION AND CAVITY PREPARATION AFTER BLACK.*

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Mr. President and Gentlemen of the American Dental Society of Europe: In bringing this subject of cavity preparation and its instrumentation before you, I claim no originality. I am merely giving you in a simple form Dr. Black's system, which has revolutionized that part of dentistry. At the last meeting of this society held in Berlin, we should have liked this subject included in his paper, but time prevented, so I shall in my humble way try and show his methods. Before this set of Black's instruments for preparing cavities was devised, we had no names for them, other than the manufacturers' individual numbering, which was confusing, to say the least; so to begin with I want to briefly explain the set, their construction and application.

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*Read before the American Dental Society of Europe.

There are three sets comprising this outfit, divided into ordinaries, specials and side instruments. The ordinaries, so called because they constitute the instruments found in most every dentist's cabinet, only put into definite form; the specials, so called because each instrument has a special use; and the side instruments, so called because they cut on side.

Each instrument is named from its working part, which describes that particular one so accurately that, when spoken, each one will be known when the formula is mentioned. The width of the cutting edge is read in tenths millimeters, the length of the blade in millimeters, and the angle of the blade from the shaft in centigrades, or hundredths part of a circle. Note, please, that the width and length of the formula, or the first and second figures constitute the size of the blade. The first figure of the formula gives the width of the blade, the second the length, and the third the angle of the blade.

The number of angles are designated as mon-angle, bin-angle and contra-angle, hatchet, hoe or spoon.

You will find the formula stamped on each instrument, but one should acquaint himself with every instrument, so that when the formula is spoken he can immediately pick it from a lot.*

In the ordinary set there are eighteen instruments, nine hatchets and nine hoes, 12-5-6, 8-3-6, and 6-2-6, 12-5-12, 8-3-12, and 6-2-12, 12-5-23, 8-3-23, and 6-2-23, the size of the blade being the same in each angle, having three angles 6-12 and 23; note that in 12-5-23 the length of the blade is rather long for cutting if mon-angled, as the cutting edge is too far from the line of the shaft, so it is contra-angled or so angled as to bring its edge within the shaft line. This principle is carried out in the whole set.

The smaller numbers are used only in shaping the internal walls

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NOTE: All instruments here designated may be found illustrated in The Manufacturers' Catalogue.

of cavities after being thoroughly opened, with the larger ones, hoe 12-5-6, used as a chisel, is a most useful instrument in opening cavities in the anterior teeth working from the labial, and hatchet 12-5-6 from the lingual; the angle 23 is seldom used, although it is invaluable in places when the angles 6 and 12 will not reach; hoe 12-5-12 is a valuable instrument in opening cavities on the disto-occlusal surfaces of lower bicuspids and molars.

In the special set there are enamel hatchets, straight chisels, bin-angle chisels, and spoons, with the angles 6, 12 and 23, having three widths and lengths of blade, 20-9, 15-8 and 10-6; two sizes of gingival margin trimmers, 20-9-12 and 15-8-12, beside a few special long-bladed hatchets and hoes, 12-8-12 hatchet and hoe and 12-8-23 hatchet and hoe. The enamel hatchets, spoons and gingival margin trimmers come in pairs, one cutting edge beveled to the right, the other to the left. All the specials, with the exception of the smaller spoons, are used in opening and preparing cavities in the bicuspids and molars, the chisels and enamel hatchets in opening these cavities, the enamel hatchets especially for cutting the buccal, lingual and gingival walls of proximal cavities to the required form, and to finally shape the enamel walls, also to bevel the cavo surface angles. The spoons for removing the carious dentine from the deeper parts of the cavity, scooping the decayed matter from side to side. In thick, leathery decay, when you suspect an exposure of the pulp underneath, the 20-9-12 or 20-9-6 spoon is especially useful in scooping layer after layer, and when you finally reach the exposed horn this wide blade will glide over the exposure, while a narrower one would fall into it, causing severe pain. The gingival margin trimmers are used only in beveling the cavo-surface angle at the gingival of proximal cavities in bicuspids and molars; one pair has the cutting edge beveled at an angle of 80 centigrades from the shaft, for trimming the mesial cavo-surface angle, while the other pair has its edge beveled at an angle of 95 centigrades, for trimming the cavo-surface angle on the distal. The contra-angle spoons, 20-9-23, 15-8-23 and 10-6-23, are used to remove soft decay from distal cavities in bicuspids and molars not reached with the angle 12, while the long-bladed hatchets and hoes are used in opening and preparing cavities on the distal surfaces of third molars, or cavities on the distal surfaces of bicuspids and molars where no tooth stands to the distal, making an occlusal extension unnecessary. The side instruments comprise the discoids, cleoids, and the short-bladed hatchets, 5-3-28 and 3-2-28. The discoid (disc-like) is used to remove softened decay from cavities reached directly, the cleoid used for cutting out angles of the pulp chamber so as to make them accessible for a broach, especially the mesio-buccal canals of upper molars, and the mesio-buccal and mesio-lingual canals of lower molars; the hatchets 5-3-28 and 3-2-28 are used only to undercut the incisal angle of cavities in incisors and cuspids.

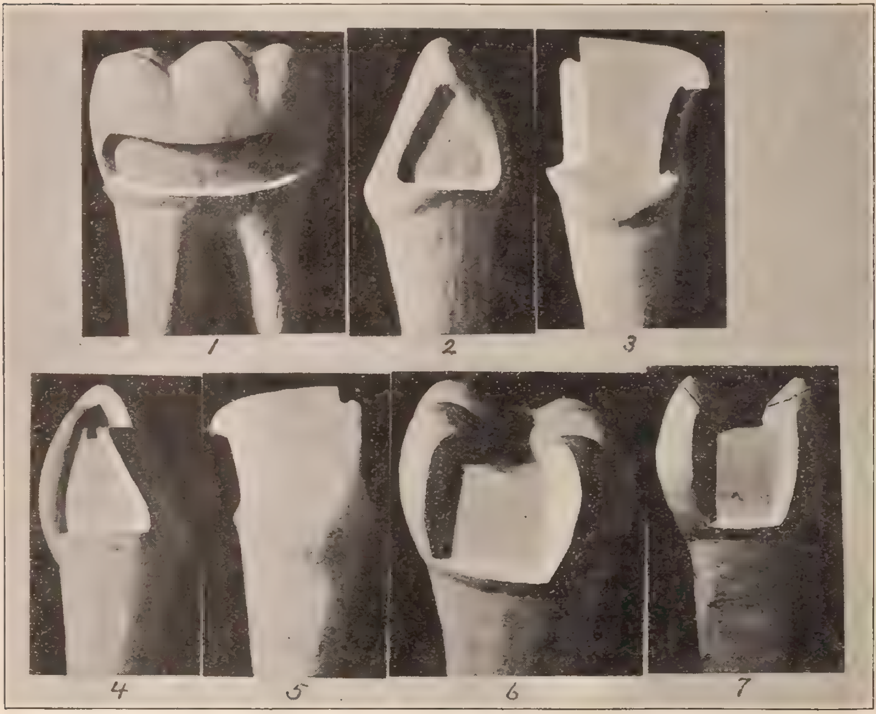
Before passing from the instruments to cavity preparation the various grasps might be explained, as by these grasps and rests one is able to control every stroke; the two grasps most often used are the pen grasp and palm and thumb grasp, although modifications of both are sometimes used. The pen grasp is used in nine-tenths of our operations, while its modification, the invested pen grasp, is also useful; in this the instrument is held at right angles to the length of the arm. In the palm and thumb grasp the instrument is held in the palm of the hand in such a manner as to oppose the working part of the thumb, the thumb of the same hand being placed against the tooth upon which you work, or a neighboring one, so as to guard the stroke. This grasp is useful in opening cavities in the anterior teeth and sometimes as far back as the first molar; it is also most useful in cleaving enamel from roots preparatory for a crown. In the use of these various grasps certain rests for the fingers are necessary in order to guard the stroke, keeping it from slipping, and injuring the soft tissue. The rests are made by placing the third or fourth finger of the hand upon neighboring teeth of the same jaw, never using the teeth of the opposing jaw, as the movement of the latter will change the rest. Neither should the soft tissues be used for this purpose, as they are unsteady.

In describing the preparation of cavities I will not attempt all classes, but rather confine myself to the more common ones, as time will not admit of the former. I will begin with pit and fissure cavities on the occlusal surfaces of bicuspids and molars, in which the superficial destruction is limited, as, for instance, the central pit of upper molars; using to start with a round bur about a millimeter in diameter, entering the pit and working it from side to side; continue this cutting with a larger size, opening the decayed area freely, after which determine the extent of decay underneath. Now, with hoe 12-5-6 used as a chisel, bin-angle chisel 10-6-6, or straight chisel 10, chisel down the four overhanging walls to sound dentine. In case this latter extension does not include the deep groves, use an inverted cone-bur a millimeter in size; start at the dento-enamel junction and undermine the four walls, breaking down these with the same instruments as used before, and continue along these lines, following the mesial, distal and buccal grooves, to a point where a smooth finish can be given the filling, cutting the enamel walls to a point where they are parallel to the length of the enamel rods, and bevel the cavo-surface angle sufficiently to protect the short ends from falling away when the filling is placed. Now remove any decay from the deeper parts of the cavity with spoons 15-8-12, 10-6-12, 15-8-6 or 10-6-6, filling this depression with cement if necessary, giving a cavity with four parallel walls and a flat seat. Now undercut for retention. In case the superficial destruction is extensive, start with 12-5-6 hoe, bin-angle chisel 15-8-6 or straight chisel 15, and chisel down the undermined enamel, starting the instrument near the edge of decay, breaking down small strips until you reach sound dentine. Often the disto-lingual groove will be involved at the same time, and the oblique ridge separating the two cavities so undermined that it becomes necessary to include that, following the disto-lingual groove over on to the lingual surface. Now finish the enamel walls as mentioned above. Special attention must be given to these in large cavities so as not to extend them too far upon the crest of the margined ridges, where the inclination of the rods is outward, or toward the crest, making a very thin margin to the filling after the cavo-surface angle is beveled. In lower molars the same rule holds good about cutting all the grooves to their extremities, or to points where a smooth finish can be given the filling, using, instead of hoe 12-5-6, bin-angle hatchet 12-8-12 or 8-6-12 to break down the undermined enamel; remove all decay with spoons 20-9-12 or 15-8-12, and cover the deep portion with cement to protect the tooth from thermal change, using the chisels to bevel the cavo-surface angles. Cavities on the occlusal surfaces of bicuspids should be treated in like manner.

Cavities on the smooth surfaces will now be considered, starting with labial and buccal cavities having their origin at the gingival third. These surfaces being protected more or less from the action of the lips and cheeks, as well as the excursions of food, are very susceptible to decay, having a tendency to spread on the surface, so extension for prevention is necessary if you want a permanent operation. Generally one or two points are pitted, or give a chalky appearance, occupying altogether about three-fifths of the surface mesio-distally, and one-third gingivo-incisally or occlusally. With straight chisel 15 or 10 break down the overhanging enamel if on the anterior teeth, using 12-5-23 hatchet on the bicuspids and molars, following this with an inverted cone bur one millimeter in size, entering it at the dento-enamel junction, and undermine the enamel around the four walls, breaking down the overhang with the above-named instruments; continue this until all the susceptible areas are included, which extend from the mesio-buccal or mesio-labial to the disto-buccal or disto-labial angles of the tooth, in its mesio-distal diameter, and from the gingival margin, which is laid under the free margin of the gum, to a point occlusally or incisally, where the margins will be kept habitually clean. The soft decay is now removed with spoons 15-8-12 or 10-6-12, the axial wall covered with cement if necessary, and the cavity undercut with either an inverted cone bur or with hatchets and hoes 6-2-12 and 6-2-23, the enamel walls made parallel to the length of the rods, and the cavo-surface angle beveled with chisel 15 or 10. This gives us a cavity with four parallel walls and a flat axial seat, including all unclean areas. In preparing these cavities for porcelain inlays the same preparation is given the cavity, except you omit the undercut and the bevel to the cavo-surface angle, making the cavity deeper to give bulk of porcelain. Fig. 1. Next in order of smooth surface cavities will be on the mesial or distal surfaces of the incisors and cuspids, not including the incisal angle. These surfaces are triangular in shape, with the base of the triangle to the gingival, with decay starting usually just to the gingival of the contact point. With hoe 12-5-6 or 8-3-6 used as a chisel, break down the undermined enamel on the labial surface, starting the instrument near the edge of decay and breaking down small pieces, care being taken not to force these into the sensitive parts, guarding the stroke with firm finger rests; continue until all the weak or unsupported dentine is cut away. With the same instrument break down the lingual wall of enamel from the lingual, unless the cavity be small, in which case use hatchet 8-3-12 from the labial, with the cutting edge used against the lingual margin; scrape this away until sufficient room is obtained to use larger instruments, with straight chisel 10 or hatchet 12-5-6, directing its cutting edge toward the gingival. Cut the labio-gingival margin well to the labio-gingival angle of the tooth, continuing along the gingival wall as far as convenient; using the same instrument from the lingual, cut the linguo-gingival margin well to the linguo-gingival angle of the tooth, completing the gingival wall with hoe 12-5-6 or 8-3-6. This should carry the gingival margin under the free margin of the gum, with its base flat in a horizontal, or labio-lingual plane, or curved with its convexity toward the incisal. The mesio-distal diameter should also be flat, with the axio-gingival line angle sharp. In case more affected enamel is found to the gingival of this, enter a small inverted cone bur at the dento-enamel junction (working from the lingual); start in the labio-gingival angle and cut a slot the depth of the bur along the gingival as far as the hand piece will allow; then from the labial enter this same bur in the linguo-gingival angle, extending as far in this direction as necessary, and along the gingival wall, meeting the slot before made, breaking down this thin ledge with either hoe or hatchet 12-5-6 or 8-3-6, continuing this cutting until you reach healthy tissue. In many cases all this cutting can be done from the labial, keeping the instrument in line with the central axis of the tooth. The incisal angle should now receive attention, working with hoe 12-5-12 or 8-3-12 from labial and lingual; chip away the undermined enamel towards the incisal until sound dentine is reached. Special attention should be given the enamel margin at this point, on account of the incisal inclination of the enamel rods, making a long bevel or extension too far to the incisal impractical, on account of the thin edge to the completed filling when placed. After the outline form has been reached the incisal angle must be undercut for retention. This is done with hoe or hatchet 8-3-12 and 8-3-23, cutting from the dento-enamel junction at right angles to the axial surface a deep groove, continuing this groove incisally into a pit, with hatchets 5-3-28 or 3-2-28, working first from the labial with its cutting edge directed toward the incisal; give the sweeping motion to the blade, cutting the labial portion of the pit, continuing this same instrument along the axio-labial line angle toward the gingival for about one-fourth its length; now working from the lingual, cut the lingual portion of the incisal pit. With hoe 8-3-23 or 6-2-23 introduced from the labial, its edge directed against the axial wall, the axio-labial line angle is made sharp, from the incisal pit to the gingival. This can also be done with hatchet 6-2-23, holding the shaft at right angles to the long axis of the tooth. The axio-lingual line angle is next made sharp with hoe 6-2-12, 8-3-12 or 6-2-23 from the incisal to the gingival, working from the labial or lingual if sufficient room is had. Now slightly undercut at the axio-labio-gingival and axio-linguo-gingival point angles into the dentine, with hatchet 6-2-23 at the labial, and hoe 6-2-12 at the lingual.

Any soft decay is now removed with spoons 15-8-12 or 10-6-12 from the deep parts of the cavity, covering this with cement if necessary; prepare the enamel wall so that it stands as near parallel to the direction of the enamel rods as possible, and bevel the cavo-surface angle with straight chisel 10 on the labial and lingual, 12-5-6 hatchet at the incisal and 8-6-12 bin-angle hatchet at the gingival. In medium and large-sized cavities, carry the margin on the labial well over the angle of the tooth, so as not to cast a shadow, causing a black line to be seen from the side, on the lingual; include the marginal ridges, as these are weak points on account of the inclination of the enamel rods. Round all surface angles and give gentle curves instead of straight lines throughout. On the distal surface always include the contact point in the cutting, but on the mesial, where the contact is so far to the incisal as to make a weak point if cut to include that, build your gold so that the contact point will be a trifle to the gingival of the original place, leaving the incisal margin a little apart from the proximating tooth, where the excursions of food will keep it clean. Special attention is given the extensions of the labio-gingival and linguo-gingival margins, to these angles of the tooth, as here they are laid into immune areas, giving the cavity the triangular form, with its base to the gingival. Fig. 2. For porcelain inlays the cavity is prepared along entirely different lines; either the labial or lingual wall of the cavity has to be sacrificed to the axial wall, in order to withdraw a matrix from either direction. If the original decay involves the labial wall of enamel, cut this well over the angle to the axial wall, leaving the incisal and gingival walls parallel or slightly diverging; cut enough of the lingual plate of enamel to lay the lingual margin to self-cleansing areas, and in order to retain the filling cut a groove in the axio-gingival line angle toward the gingival, and in the axio-incisal line angle toward the incisal, joining there with a groove along the axio-lingual line angle. If the original decay involves the lingual wall of enamel, cut this away to the axial wall, including the marginal ridge. Cut enough of the labial plate of enamel to bring the cement line in full view from the front, as in this position it is least seen, prepare the gingival and incisal walls, as in the above-named cavity, cutting the groove for retention in the axio-gingival, axio-incisal and axio-labial line angles; finish the enamel walls so that the length of the rods stand as near parallel to it as possible, with no bevel of the cavo-surface angle.

Fig. 3. Cavities involving the incisal angles are prepared along similar lines as those above. The gingival half of the cavity is prepared the same, except the axial wall is cut deeper into the dentine toward the labial and lingual angles to give firm anchorage at these points; the weak incisal angle is cut away to sound dentine with straight chisels 20 or 15. With a corundum stone cut a step in the incisal edge, at right angles to the axial wall, cutting far enough to the mesial or distal to get firm anchorage, leaving the labial wall standing higher than the lingual. In teeth with thin incisal edges, this cutting to the gingival should be sufficient to get bulk of gold for strength, and have the labial plate supported by dentine. In com-



paratively thick incisal edges this cutting from the labial plate need be very little, and in thick edges none at all, cutting enough from the lingual plate to get firm incisal anchorage. Now with an inverted cone bur eight-tenths of a millimeter cut a groove into the dentine from the axial wall of the cavity proper to the other extremity of the step, between the labial and lingual plates of enamel, nearer the lingual than labial, breaking down any weak lingual enamel with straight chisels 15 or bin-angle chisel 15, deepening the groove with the same bur into the dentine, sufficient to retain the filling, care being taken not to expose the horns of the pulp. Now round the labial and lingual incisal corners, to protect the sharp ends of enamel rods, and finish the enamel walls with chisels to their proper inclinations, beveling the cavo-surface angle with chisels. Fig. 4. On account of the unsightliness of gold in this position, porcelain is indicated, the preparation for which is entirely different. Figs. 4 and 6. With straight chisels cut away the weak incisal angle to sound dentine; be sure to have the labial plate of enamel supported by dentine; extend this cutting to the gingival far enough to include all affected enamel, rounding the labio-gingival surface angle with the same chisel, working from the lingual, cut the lingual enamel wall from the incisal to the gingival; the latter wall should be made flat in its mesio-distal diameter, with its axio-gingival line angle somewhat rounded instead of sharp, with an inverted cone bur about eight-tenths of millimeter; enter the dento-enamel junction at the axio-linguo-gingival point angle, carrying the bur toward the incisal and undermine the lingual plate enamel; chip this away with the chisels, and continuing until enough surface is gotten to equal the labial restoration. From the incisal edge, with a corundum stone, cut enough from the labial plate of enamel at right angles to the long axis to get bulk of porcelain, cutting a deep groove or slot toward the gingival at the mesial or distal extremity. With a round bur cut a deep groove in the axio-labial line angle toward the labial, ending in the axio-labio-gingival point angle, which is extended toward the gingival into a depression. The enamel walls are prepared as in preparation for gold, except the cavo-surface angle is not beveled. Fig. 5. Lastly, I will take up cavities on the proximal surfaces of bicuspids and molars (Fig. 6), and, judging from the great number of failures, special attention will be given to extension for prevention. On account of the broad proximating surfaces, more sacrifice of sound tooth structure is necessary to place the margins into immune areas, carrying these well into the buccal and lingual embrasures, where the excursions of food, the action of the cheeks and tongue will keep them from the lodgment of food. On the lower bicuspids and molars, the upper bicuspids, and the mesial surfaces of upper molars, the contact points lie in the buccal third of the teeth, in their mesio-distal diameter, so decay will usually be found just to the gingival of these points, involving more of the buccal than the lingual third. On the distal surfaces of upper molars the reverse is true, so extensive cutting toward the lingual is necessary in the former case, and to the buccal in the latter, to place the margins in self-cleansing areas. The completed filling should restore the full mesio-distal diameter, and give a normal contact, inviting the gum to fill the interproximal gum space up to the contact points, the gingival margin placed well under the free margin of the gum, and the labio and linguo-gingival angles of the cavity carried well to these angles of the teeth. In opening and preparing these cavities, the specials are almost exclusively used, starting with straight chisels 15 or 20, bin-angle chisel 20-9-6 or 15-8-6, using either mallet or hand force, break down the buccal, lingual, and occlusal overhanging enamel, with the cutting edge near the edge of decay; chip away small pieces, forcing it into the cavity. This chipping should be done along the lines of the enamel rods. Often this cutting can be done more advantageously on the buccal, with the chisels, and on the lingual, with the enamel hatchets 20-9-12 or 15-8-12. With these same instruments, continue breaking down the occlusal overhang toward the central fossa. On the lower teeth this cutting is done exclusively with the enamel hatchets, although the ordinary hoe 12-5-12 can be used to break down the above-named surfaces. In distal cavities on the lower bicuspid and molars, after the cavity is thoroughly opened, extend the buccal, lingual and gingival walls to the desired areas. With these same instruments shave the buccal and lingual walls from occlusal to gingival. Along the gingival wall use a scraping motion, using the right bevel from the center of this wall to the right, and the left bevel from the center to the left in operating on the lower teeth; on the upper teeth these same enamel hatchets are inverted, so the opposite bevels are used to do this work. If, after cutting this far, wider extension is necessary buccally, lingually or gingivally, cause an inverted cone bur about eight-tenths of a millimeter to enter the dento-enamel junction, and undermine the enamel in the directions above mentioned, breaking down this overhang with chisels or enamel hatchets. Continue this until the desired area is reached. After cutting as far on the occlusal toward the central fossa with chisels and enamel hatchets as possible, use an inverted cone bur about a millimeter in size, and cut a step at right angles to the axial wall. Start the bur at the dento-enamel junction, cut mesially or distally to the end of the grooves, drawing the bur to the surface with each cutting, breaking down the undermined enamel with chisels or enamel hatchets. With this same bur, undermine the buccal and lingual walls of this slot, until the middle third of the tooth bucco-lingually is consumed, following any grooves to the buccal and lingual to points where the completed fillings can be given a smooth finish. Make the step wider at its mesial or distal termination than its opening into the cavity proper. Never cut deeper than the dento-enamel junction in any extension of cavities, keeping as far from the pulp as possible. The cavity should now be undercut at the gingival, using enamel hatchet 10-6-12. Start at the beginning of the gingival third of the axio-buccal line angle and cut a groove in the dentine to the axio-bucco-gingival point angle. Repeat the same on the lingual, so that the cavity will be wider at this point than its opening. With discoid 20, or contra-angle spoons 20-9-12 or 15-8-12, remove all soft decay, and if necessary cover with cement. Prepare the enamel walls, so that the direction of the rods stand parallel to them, and bevel the cavo-surface angle on the buccal, lingual and occlusal with chisels or enamel hatchets, using the gingival margin trimmers for that purpose at the gingival, the 20-9-12 with the cutting edge beveled at the angle 80 with the shaft, in mesial cavities, and the 20-9-12 with its edge beveled at 95, in distal cavities. This will give us a cavity with a square gingival seat, parallel or nearly parallel, buccal and lingual walls, a flat occlusal step at right angles to the axial wall and sharp line angles.

In badly decayed molars, where the buccal and lingual walls are extensively undermined with decay, leaving the points of the cusps unsupported by dentine, cut them down liberally, extending the cavity so as to include the buccal and lingual grooves, building the filling over these points to original contour. Fig. 7. In mesio-occluso-distal cavities in bicuspids, especially in pulpless teeth, carry the occlusal margin well to, or slightly over, the crest of the cusps so that all masticating stress will be borne by the filling, preventing the splitting of buccal or lingual walls.

For inlay work the retaining points or grooves for retention are omitted, the buccal and lingual walls are made parallel or slightly diverging, so as to be able to draw a matrix.

GOLD INLAYS AS APPLIED TO DENTISTRY.*

BY E. M. S. FERNANDEZ, D. D. S., CHICAGO, ILL.

Mr. President, Ladies and Gentlemen: The question today is, has the gold inlay come to stay permanently in the practice of dentistry, or is it only a fad that will first be used, next abused, and last of all fade away from us as other fads have done heretofore?

We have in our profession today practitioners of good repute who claim to fill the cavities in the human teeth by no other means than inlays made to fit properly prepared cavities accurately, and held in place by the use of cement.

We have, also, practitioners of just as good repute who claim that every cavity should not be filled with an inlay, but that good care and judgment should be used to decide the proper place for an inlay.

I sincerely believe that the use of the gold inlay has come to stay permanently and that the profession at large will welcome its birth in dentistry for many years to come.

Gold inlay work properly made and judiciously applied will certainly overcome many difficulties in the human oral cavity. For instance, it may be used to great advantage in cases of mal-occlusion where by carefully studying the conditions and uniting two or more inlays, as well as building up cusps wherever required, a proper and permanent occlusion may be gained and retained.

In cases where the teeth have become loosened by the ravages of pyorrhea or by mechanical injuries an excellent use can be made of gold inlays. Two or more teeth can be held firmly in place by an appliance made of two or more inlays soldered together and cemented in place. In cases where two teeth have become separated, allowing a space for food to lodge and cause an inflammatory and diseased condition of the tissues, which, as we all so well know, is the source of a great deal of trouble, can be corrected very satisfactorily by the use of two gold inlays, set mesio-distally and united or soldered at the occlusal angle, thereby retaining the two teeth in place, preventing the space from becoming larger, and closing it from any further wedging of food.

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*Read before the Chicago-Odontographic Society.

Gold inlays are also a great blessing in dentistry when used as supports in some cases of bridge work. By studying out the case carefully a very pretty and useful combination of inlay and bridge work can be made, and prove very satisfactory.

In fact, the field for the useful application of gold inlay work in dentistry is certainly wonderful. I believe it has reached a broad and high standard in our profession and has come to relieve us from much hard work, but it is unfortunate to have to admit that the development of cements has not kept pace with us. We have left it far behind. As I am not a chemist, I am not prepared to give an intelligent description of what the ideal cement for our work should be, but I know that we need it now and hope our chemists will, before long, give us a happy and satisfactory surprise in this particular.

I thank you for your kind attention and hope the professional brothers present this evening will have a bright and lively discussion on the subject to offer.

GOLD INLAYS AS APPLIED TO DENTISTRY.*

BY GEO. W. HASKINS, D. D. S., CHICAGO, ILL.

Had I been requested a year ago to speak upon this subject I should have found no difficulty in saying much that might have been taken as harsh criticism of the gold inlay. In no field of dentistry have I worked harder and with less satisfaction than in the making of gold inlays. With simple cavities it was relatively easy to reach a fair degree of success, but in these better results could be attained with non-cohesive and cohesive foil, and with less expense of time and labor. In those major cases when it would be of the greatest benefit, after much labor, care and time, I had to satisfy myself with "it is the best I can do." Sometimes the forces at work in the mouth were good to me and the fillings remained in place, and sometimes they didn't.

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*Read before the Chicago-Odontographic Society.

There are many steps in the making of inlays with a matrix. A departure from perfection in one of them will be magnified in the final results, and the only way to overcome the defect is to start at the beginning. Now, why use such a method of filling teeth when by the use of non-cohesive and cohesive gold foil one can get better results in less time? I have no use for the matrix made gold inlay. But for Dr. Taggart's cast inlay I have nothing but unqualified appreciation. Such perfection of fitting as it makes possible, limited only by the care and skill of the average operator, leaves me with no choice. It is good dentistry, and, unlike many other departures, it has come to stay. You do not have to pretend the joint is good or be satisfied with a poor one. You can have a good joint if you want it. And this cannot be said of the inlay made with a matrix, either in gold or porcelain, except in the hand of the superlatively skillful or persistent.

Were it not for the better appearance which the porcelain inlay presents, I would have almost as little use for it as I would for the gold inlay, but it has this good quality and the additional one of not irritating the pulp, and for these reasons I have used them, and I shall continue to do so, but in the six front teeth only. Even then it hurts my eyes when after a little use I see them with broken edges and stained joints, and it hurts my feelings to reset and replace the lost ones.

With regard to the statement that the porcelain inlay is a better preservative of the tooth than the foil filling, I do not believe it, provided the foil filling was properly inserted in a cavity prepared with the thought of preventing future decay, and, of course, by skillful hands.

There is a great difference in the amount of cutting necessary in the preparation of the cavity for the inlay and the foil filling. This is particularly so in the proximal surfaces of the bicuspids. After preparing such a cavity for foil and extending it to the gum margin, we find we have not encroached upon buccal and lingual surfaces to any great extent, but if now we determine to make an inlay, we must cut away sound tooth until all too often we have but a remnant of such surfaces left, and such destruction is not necessary. Old and tried methods have proved their worth through the years that have passed, and though they may perhaps be more difficult, can we as a profession afford to do it some other way merely because it is easier? What would we think of the surgeon or physician who would give such a reason for his choice of method?

In such cavities as I have mentioned, I would prefer to use non-cohesive foil with cohesive foil in the step. There is no question of its value as a filling, and it would require the best fitting inlay to do as much. There would be decidedly less destruction of tooth and less gold showing. Do not overlook the value of non-cohesive foil for filling teeth not in little pellets, but in rolls containing never less than one sheet and sometimes two or three. As a method, it is quick and it is sure. I would not advise its use always to the exclusion of the inlay, but where it is the best method use it, and when the inlay is the best use that, meaning always the cast inlay, and the very best one you can make.

As a profession like our medical brethren, we are prone to run to extremes, and it would perhaps be a good thing to recall a few of our acts of the past. There are not many present who have practiced long enough to have seen a mouth that had been ruined by the Arthur method of separation, yet many a good, conscientious practitioner mutilated mouth after mouth, and did it in good faith, thinking he was doing his patient a kindness.

Before we knew as much of cocaine as we do now, we used it indiscriminately, and in our ignorance took great chances, for often very small possible benefits. Today we use it with the discretion born of experience, and the death rate is decreasing. About that time the journals were full of articles on the use of flour of sulphur, tooth powders were full of it and mouths were full of it. Today you never hear of it. Cataphoresis had its day. Copper amalgam was heralded as the ne plus ultra of filling material, and it took several years for us to learn that it was not quite all its advocates thought it was. It took us some time to discover that we were not using good judgment when we advised the use of porcelain bridges, except under the most favorable conditions, and an eminent gentleman in the east within the last three or four years was not patient with a man who used gold in the molars and bicuspids. Porcelain was the only thing. Today he is using gold inlays, and so we might continue and fill the entire evening with the history of these things.

When a patient calls upon us for our services, the first thing we have to do is to exercise our judgment in discovering the trouble, and then advising the remedy. This is as far as the physician goes, and if the diagnosis and advice are both wise they in themselves are worthy of a fee, but the dentist and the surgeon both go farther than this—they administer the remedy after the diagnosis and advice has been given, but the remedy has no value if the advice was wrong, and often does great harm.

Gold foil, properly handled, has done too good work in the past years to discard it lightly, and it still has a work in the future. Use it in the smaller cavities, use it in the front teeth, use it in the bicuspids in its non-cohesive form, when to put in an inlay much needless cutting would be necessary, and use the inlay when it is the best remedy, but do not use it because it is the easiest. It is wonderful the perfect adaptation of surfaces which the cast inlay provides. It is a good thing for the people as well as the profession. But don't forget that your judgment comes first, the making of the filling afterward. Let your judgment be well seasoned before using it.

GOLD INLAYS AS APPLIED TO DENTISTRY.*

BY VICTOR H. FUQUA, D. D. S., CHICAGO, ILL.

There is no subject of more vital importance and interest to the dental profession of today than that of restoring caries of the teeth with gold inlays. We have passed the experimental stage of this process, and it is neither my purpose nor intention to offer any defense of this principle or to give you any new or original ideas, but to point out as briefly as possible some of the advantages the gold inlay possesses over the method which is rapidly growing obsolete of filling teeth with foil and amalgam, and why we should get out of the old ruts and take up this most humanitarian process.

The dentist of today who is not making gold inlays or is even "lukewarm" is falling behind, doing himself an injustice and depriving his patrons of that which they have a right to expect and demand. Namely: permanent operations minus long hours of suffering under the mechanical mallet with mouth propped open, filled with rubber dam, clamps, ligatures, separators and, last but not least, the sandpaper strips for final finishing. Our first duty should be to perform permanent and serviceable operations, our second to accomplish this with as little pain and discomfort as possible, and our third to save ourselves time and labor.

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*Read before the Chicago-Odontographic Society.

The gold inlay has come to stay because it measures up to these three standards. The first consideration in making an inlay is the cavity preparation, which can and should be done almost entirely with stones mounted on mandrels for both the straight and right angle hand piece; inlay burs being used only for very small cavities and for squaring the seat of the inlay.

The pain in preparing cavities, using properly shaped stones kept wet with a stream of water in the hands of an assistant, can be reduced to a minimum, and you have won the gratitude of your patient from the start. Plenty of water applied to rapidly revolving stone and bur is the best dental obtundent that has ever fallen into my hands, and a personal trial in the mouth of the most skeptical will convince him of the fact just stated. Cavities prepared in this manner have perfectly smooth margins, making easy the withdrawal of matrix, impression or wax model.

Recent developments in the method of making gold inlays has superseded all others. We are no longer confronted with the perplexities of making a perfect matrix, warping in soldering, doubtful occlusion and imperfect contact points. For this last step in the evolution of the gold inlay we are indebted to Dr. Taggart, and I wish to pay my personal tribute to him through this society for this beautiful system which he has originated and perfected, thereby revolutionizing the practice of dentistry.

The question of cementation is the one great point which inlay workers in the past have had to defend, but years of clinical experience in observation of my own and the conscientious work of others has convinced me that the cemented joint instead of being the "weakest link in the chain" is the strongest, provided the inlay has been seated so as to resist direct and lateral pressure and perfect adaptation to cavity margins obtained. For every failure of a gold inlay there can be but one cause—that of faulty cavity preparation. Just so long as cement is depended upon to retain inlays in saucer-shaped cavities there can be nothing but failure. No conscientious operator will set an inlay he knows is not perfectly adapted to the cavity margins, so I will give no consideration to failure from this standpoint.

On the cover page of the *Dental Cosmos* you will find these four words month after month: "Observe, Compare, Reflect, Record."

I have faithfully obeyed these injunctions as regarding gold inlays, and you will pardon the mention of a case which came into my hands 10 years ago where five large gold inlays had been placed in molars and bicuspids by our own Dr. Ames. These inlays have been doing service 15 years and they stand in perfect condition today as a monument to Dr. Ames' skill as a conscientious pioneer inlay worker, while my foil fillings have failed under the process of mastication. I am grateful to Dr. Ames for the inspiration I have received by observing and reflecting on the success of his labors. It must be remembered that 15 years ago we did not have the good cements we have today or the knowledge of cavity preparation or the methods of getting perfect adaptation to cavity margins, and yet these inlays have stood the test of time, convincing me in the safety of the cemented joint.

For years we have heard the dental profession weep and wail over the teeth that have been sacrificed to the ill-fitting, unclean, unsightly gold shell crown. In the hands of the successful inlay worker of today, molars and bicuspids wtih large mesial distal and occlusal cavities are being saved in comfort with pulps intact through the intelligent use of the gold inlay, and gold shell crowns are rarely indicated where in the past it has been common practice. Perfectly sound molars and bicuspids that were formerly sacrificed to the gold crown to serve as abutments for bridges need no longer be crowned. A good fitting, well seated, interlocked inlay serves this purpose most admirably.

Large and inaccessible cavities in pulpless molars and bicuspids where foil is impossible and amalgam used as a makeshift can be filled much more satisfactorily with inlays in the same length of time, and with a clean conscience a fee bill can be rendered far in excess of that for an amalgam filling, knowing you have rendered better service to your patient and increased your self respect.

The present system of making gold inlays enables us to vastly increase the amount of a day's labor as compared with what can be done with foil and pluggers, and it has transformed the practice of dentistry from veritable drudgery to that of positive pleasure. Increasing the amount of our daily labor should of necessity increase our incomes and personally this is a matter of no minor importance.

In my enthusiasm I am not unmindful of what has been and is still being accomplished with foil, but consideration must be taken of the vast amount of labor and time it consumes, not to mention the discomfort to the patient. We are constantly reminded by the conservative operator that gold fillings stand up for 25 and 30 years. Yes, but how many? I do not think I am far wrong when I say that five years is the life of gold fillings made by the average dentist. I am not so conservative that I intend to wait 25 years to see if the other fellow's inlays come out. I have been watching some of my own for 10 years and every time I see them it renews my confidence in that cemented joint. Conservative foil workers tell us that foil is indicated in a mesio-occlusal cavity of a molar, but for a disto-occlusal cavity a gold inlay is indicated. It certainly is not logical to my mind why this distinction is made. If an inlay is indicated in a distal civity, why not in a mesial? In looking over recent dental journals it is surprising to read of the number of methods of lining cavities for gold fillings with cement, bringing the cement to the margins of the cavity and proclaiming its advantage. Many of the writers of these articles are conservative foil workers, doubting the success of the inlay, and yet are making use of the very principle which they condemn in the inlay.

While it may be true that our cements are far from being ideal, it is true that these same cements properly handled are serving their purpose admirably, and the fact that inlays have been doing service for 10 and 15 years is ample proof of this statement. As the ox cart has given way to the automobile as a means of transportation, just so will our old methods give way to the cemented filling.

THE VOICE IN ITS RELATION TO PROSTHESIS.*

BY DR. J. H. WOOLLEY, CHICAGO, ILL.

First Paper.

I have often been asked by those wearing artificial teeth why it is that their voice has never been the same since losing their natural teeth. The solution of this question may be answered in part by studying the function of the natural teeth in the production of articulate sound. We may be able then to remedy some of our failures and difficulties in prosthetic work.

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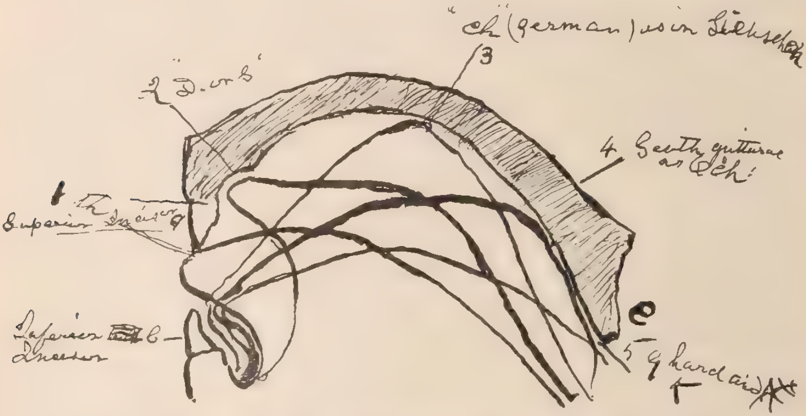
*Read before the Odontological Society of Chicago.

Speech is formed by the passage of air through the oral cavity, and by the apposition of the tongue to the different parts of the mouth, such as hard and soft palate, gums behind the teeth, and by the size of the oral cavity certain characteristics are given to these sounds. These articulate sounds may be divided into vowels and consonants, but there is an essential difference between them. An English dental writer says vowel sounds depend on the relation of the size of the oral cavity to the size of the orifice.



As, for instance, in the words "far" and "fear," the size of the oral cavity and aperture are quite changed, being more capacious in "far." Consonantal sounds depend on some superadded condition of the orifice, quite independent of size. Thus in "eth" and "ess," where the difference of sound is consonantal and the vowel sound the same, we find the size of the cavity and its relation to the orifice to be unchanged. The dental orifice is modified by the altered relation of the tongue to the mouth.

The illustration before us represents the middle line of a vertical section of the superior maxillary, the soft palate and tongue, in various positions, on the gums behind the teeth, soft and hard palate, producing the different sounds.

This diagram is intended to illustrate by section the relation of the tongue to the teeth and palate in the production of several sounds.

a. Upper incisor tooth; b. Lower incisor tooth; c. Uvula.

1. Application of the tongue to incisor in producing the sound "th." 2. Tongue to palate sound "d"—closure complete; sound "s"—closure incomplete. 3. Sound "ch" (German) as in "liebchen." 4. Sound German and Scotch gutterals, as "och." 5. Sound "g" hard and "k."

It is Salter's diagram and description.

This shows that when the tongue is placed or elevated in different parts of the mouth, the closure may be perfect, imperfect or modified, according to the characters to be produced. When the tongue is at rest, its borders are coincident with the line of meeting of the upper and lower teeth, its tip slightly depressed, resting against the back of the lower teeth.

In the diagram before us we readily notice the important office of the tongue in the formation of articulate sound, particularly the consonantal. The vowels can be formed when the tongue is at rest. In the vowel sounds its borders are on the line with the crowns of the lower teeth, its tip slightly depressed and resting on the back of the lower teeth, but the office of the tongue in the formation of consonantal sounds "is this approximate coincidence of shape and close propinquity that makes the instantaneous application of any part of the tongue to the corresponding part of the dental arch of either jaw so easy, and this it is also that makes any considerable dental irregularity or deficiency destroy, by preventing this application, the power of producing certain articulate sounds.

"Hence, to state this proposition conversely, we may lay down the practical rule that all measures taken with a view to restore imperfect articulation due to the teeth, must have for their object to restore the coincidence between the entire dental arch and entire borders of the tongue." Salter.

In conclusion I will say, that by the study of the functions of the natural teeth in the formation of articulate sound, we are enabled to produce the best results in the constructure of dentures, by following as closely as possible nature's plans, which enable us to discover where defective articulate speech occurs, whether in the setting of the teeth or shape of the plate wherever defects in denture occur that prevent pure, articulate speech.

Before closing I would like to make some suggestions as to first steps in procedure in laying out mechanical plans. Before the teeth are removed, to be replaced with artificial substitutes, the patient should be instructed to articulate the vowel and consonantal sounds; to discover faulty articulation if it occurs; after which a close observation of the oral cavity should be made. If some of the teeth have been lost it has been claimed by some that the tongue has become thickened by falling into these vacant places. This is to be made note of. If this condition has affected the speech it can be remedied.

Proceeding further, an impression of the mouth should be taken before the removal of the teeth. This model will give some guide as to height of ridge and general condition of the oral cavity. In some cases where singers are needing full or partial sets of teeth, the plan devised for acquiring resonance of tone sometimes interferes with the articulation of teeth for masticating purposes. Should this occur, a set can be provided for that purpose.

In my next paper it will be my purpose to present the subject of the functions of the artificial teeth in the production of articulate sound, together with its relation to the art of expression, by way of co-relating the mouth to the rest of the organs of the face.

THE DENTAL FEE.

BY ABRAHAM WAAS, D. D. S., PHILADELPHIA.

In these days when everything has the dollar mark attached, it may not be amiss to say a few words about the dental fee.

A professional man is not supposed to practice solely for money, but money is an important factor in the affairs of life.

Go into any dental college and you will find that the average student has taken up dentistry because he thinks that there is money in it. Probably when he paid a dollar or two for a little dental work, he became infatuated with the idea that it must be lucrative. After spending hundreds and probably thousands of dollars and years of time and finding that he can only make mere mechanic's wages, he is likely to change his mind about the earnings and opportunities of dentists.

The practicing M. D. charges for every office visit, be the time ever so small, while the average dentist really makes all the treatments, consultations, etc., free! He performs an operation of an hour that requires as much skill as many a surgeon's operation, and probably receives $2, while the surgeon receives $200. I know of one case where a dentist gave two treatments and one filling and sent in a bill for fifty cents.

The dentist calls himself a professional man, and he is so recognized, but when someone calls at his office with a condition of the mucous membrane of the mouth, requiring, say, a mouth wash, does he give a prescription? Oh, no; he looks over his samples of free mouth washes (proprietary preparations, the constituents of which to any degree of accuracy he does not know) and gives several samples and when the patient about to depart, looking like a State Fair visitor, asks (in most cases a matter of form): "What is your fee, doctor?" he replies, with a smile, "Oh, nothing!" What a philanthropist!

We all know the case of the woman who pays $10 for a hat worth about $4 and nearly faints when asked to pay $3 for a gold filling.

Some operators may get an adequate fee, but the fact remains that dental fees generally are too low. Of course a $10 an hour fee is out of the question, considering the amount of work that sometimes may be necessary; but who can say just how high the fee should be when we remember the strain on the dentist?

A dentist at 50 years of age (exceptions, of course) cannot stand the long strain that one of 30 can, and, as eyesight is apt to fail with advancing years, cannot work as well. This is at a time when other professional men are apt to be reaping the benefit of their good work in the past. There is only one way out and that is to charge a fee for everything that is done in the office and not to have a fixed rate (per operation) for any work and to charge for the time, etc., required and, of course, to remember at all times to look after the welfare of the "worthy poor."

PRESIDENT'S ADDRESS.

BY C. L. SNYDER, D. D. S., FREEPORT, ILL.

It is said that when a Prince of Ancient Britain was called to rule, he was requested to retire at midnight to the vaults where his fathers slept and, by the graves of his ancestors, to pass the hours in meditation and in prayer that he might absorb their virtues and become qualified for the duties he was about to assume.

In a like spirit of research and preparation, the Northern Illinois Dental Society meets today to drink deep of the wine of enlightenment, helpfulness and encouragement. The honor that came to me from the members of this Association has been highly appreciated. I will try to do my duty as your presiding officer conscientiously; and whatever failure you may note in the discharge of the duties of my office, will, I trust, be viewed with leniency.

I come to you after the year's work has ended with a thorough appreciation of what my membership in the association entails, and the personal sentiment for its members cannot be disturbed. The spectrum takes the beam of that light which no one can really define and throws it into seven hues, but the spectrum of the Northern Illinois Dental Society has nine ingredients. They are courtesy, sincerity, patience, helpfulness, good temper, unselfishness, honor, endeavor and progression.

These great qualities indicate the effect of our Association upon the character and conduct of the individual members. Upon the minds of the younger dentists I would impress the significance of affiliating with associations such as this. It enriches the heart, enlightens the understanding, quickens the moral sensibilities and clarifies the vision to mellow and mold character.

The graduate with his parchment of honor, like the stone cutter on the Parthenon, is apt to be so blinded by the dust of the block he has chiseled that he cannot see the beauty of the temple which springs from the brain of experience. The diploma is but the keel of a ship properly laid, and a magnitude of hard work is to be accomplished ere it can be launched with confidence and promise of a fulfillment of desire.

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*Read before the Northern Illinois Dental Society, October, 1907.

As associations make all their members purer, nobler and more enlightened than they otherwise would be, or else cause them to retrograde in all the elements of manhood, we cannot but view with increased interest the value, helpfulness and incentive afforded for the practice of a higher plane of usefulness in our chosen profession.

The successful dentist is courteous and honest with his patrons, considerate of the nervous strain to which they are subjected, and is ever ready to enlighten the comprehensive mind with reference to the principles to be employed. Perfect candor and reliability cannot be overestimated.

The progressive tendencies and possibilities yet to be achieved can best be illustrated by comparison. When we look back twenty years at the time this Society was organized and recall the appliances then in use and the methods employed, we cannot but realize that our profession is keeping well abreast with the times. The wonderful advancement can be appreciated when we call to mind crown and bridge work, and of more recent development the porcelain inlay and the jacket crown, also the gold inlay problem which for sometime past has attracted our attention owing to its durability, which has finally been solved by our untiring co-worker, Dr. Taggart, a member of this Society. These and many others are only illustrations of ability to use the forces around us daily, and direct their energies in such a manner as to contribute to the advancement of our profession.

If I were to advise along the line of development, I would suggest that as individuals we take up some line of thought and pursue it to accomplishment. If you are particularly interested in a certain subject or feel the need of some appliance not yet attainable, concentrate your thoughts along these lines and you will no doubt reap remarkable results. When we revert to those who have been important factors in the dental world, we find it was the giving and not the burial of some talent which all possess in greater or less degree. For generations the "widow's mite" has been illustrative of this principle. From this we may learn that no matter how unimportant some thought or accomplishment may appear to the individual dentist, when imparted to others, it may be the nucleus of important discovery, leading to greater light when the obstruction is removed.

Much depends on individual effort, yet one cannot afford to lose the inspiration of personal contact with those who dwell along the same line of thought. The literature of our Societies certainly affords isolated development to the individual, yet it cannot enlarge and develop the reasoning faculties as personal intercourse will and can, when we come in contact with a progressive dentist. Those who remain away from these meetings and depend upon dental reports and library work for information on subjects of interest to them, not only deprive themselves, but also others of the benefit of experience.

From the first inception, the establishment of the Northern Illinois Dental Society appealed to the profession who not only encouraged the project, but stood ready to give material aid in carrying it forward to success. That the efforts of its promoters were appreciated in the past has been demonstrated both in the considerate recognition and legislation that has been given them.

All that I have said, all that is in my heart to say, is to be true and faithful workers, morally firm and steadfast. Then in the future, as in the past, opportunities will be afforded by the powers which govern them, and our Society flourish, the individual member be benefited and enriched by interchange of thought; and encouragement given to those who from natural diffidence absorb more than they give, yet whose very personality is an inspiration.

Again thanking you for the honor of the past conferred upon me, I can but reiterate the promise of continued interest, loyalty and keen appreciation of benefits to be derived in this Society.

IMPRESSIONS AND MODELS FOR RUBBER PLATES.*

BY C. L. SMITH, D. D. S., ST. CHARLES, ILL.

One of the first and most important steps in the making of a successful denture is to get a perfect impression of that part of the mouth you wish to cover.

Probably no two people here would proceed in exactly the same way, but the final result in most cases would be the same. I think it is generally conceded that plaster is the only wholly reliable material to use, although one of the most successful plate workers I ever knew never used anything but plain yellow beeswax for all impressions.

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*Read before the Northern Illinois Dental Society, October, 1907.

Others use modelling compound and some a combination of plaster and wax or modelling compound. It is the method and material that you are most successful with that you should use.

I select an impression tray large enough to leave at least one-quarter of an inch space between the rim and the gum. In case of a high arch, build up the palatal portion with wax to about the same distance in front and almost touching the mouth in the back, but never building up the sides of tray.

Placing a small amount of salt in warm water, I slowly sift the plaster into the porcelain mixing bowl until just a small amount of dry plaster remains on top, then pour off excess of water and stir a very little.

With the patient sitting in an upright position, place desired amount of plaster in tray and insert in mouth with right hand, raising heel to place first and gradually adjusting the front. Just as plaster begins to stiffen, change hands and holding tray firmly to place with the left hand, using the right forefinger to pull the cheek out all around as far as possible to smooth out the folds that might be caught in plaster, then forming a half circle with the thumb and fingers place firmly on the cheek opposite the top of tray to force plaster as high as possible and also tight to the gums. This, to me, is much more satisfactory than to build up the outside of tray with wax, and the close pressure obviates the necessity of any scraping on the outside of the model.

The lower is taken in the same manner and when I begin to apply pressure on the cheek, I have the patient raise the tongue to the roof of the mouth so the impression will not go down too far and impinge on the muscles in the floor of the mouth.

The taking of partial impressions is simplified by making a core for the places where teeth have tipped together. To do this, I use a piece of sheet lead cut to the right size for a tray and with a small amount of plaster or hard modeling compound take an impression of the undercut, removing lead, trimming core to right size and shape, slightly oiling it and the adjoining teeth and proceed as for a full case except I oil the tray so it can be removed and the buccal part of the impression broken in as few pieces as possible; the lingual coming away in one piece. The core is then taken out and with the pieces, adjusted in tray and waxed together. The mouth is now carefully examined and impression scraped to correspond to the hard places or where plate will need relief, which is usually a small strip along the center of the roof, never changing the lower impression in the least. Before scraping, I pick into the impression with a knife as deep as I want to remove and then just smooth it.

After coloring and applying separating material, it is ready to fill with as stiff plaster as will shake down easily, and placing of small wire brads in sharp ridges or lone or long teeth will prevent many broken models in separating. I do not turn it upside down on glass or paper, but build up as wanted and put in a level position. I cannot give a good reason for this, only it seems to give a more dense surface to the model.

After the teeth have been tried in and the length of plate decided on, the model is slightly beveled at the back to make the plate fit tighter at the heel. This is the only preparing the model gets. I never use a model over twenty-four hours old and prefer to vulcanize the same day the impression is taken.

Now I expect criticism on this paper, and I hope I will learn something. The discussion will probably be worth more than the paper, provided you disagree with me.

A CASE OF CONCEALED OBLIQUE FRACTURE OF THE INFERIOR MAXILLARY BONE.

BY DR. OTTO PLUTSCHOW, CHICAGO.

A young man presented himself at my office seeking relief from a severe gnawing pain in the right lower jaw bone and cheek, which he attributed to some part of the roots having been left in after extraction. He gave the following history: Three days previously the lower right first molar was extracted, which necessitated the application of the forceps twice. After the extraction the pain ceased nearly entirely. But two days after the extraction, toward evening, he noticed a somewhat peculiar sensation in the right lower jaw, which he attributed to the pain from the wound. He was unable to sleep well, and was very restless. In the morning pain had increased considerably. He went to work, but had to quit about noon on account of pain becoming so annoying. He called for treatment at the place where he had the tooth extracted, but was told that everything was all right. Coming home, he applied poultices, without relief. This night he was unable to sleep, because the pain became so excruciating and neuralgic in character. The following morning he came to my office, and examination revealed the following: The first molar had been extracted, and I thought at first that some fragments of it were left and had caused the pain. I explored to determine whether parts of the roots were left, but with negative result, as the explorer met no resistance, nor was it painful to the patient. The gingivae near the wound were normal, except where the forceps had slipped and caused laceration. No pus was present. There was slight swelling, there being the usual hyperemic appearance after extraction, showing healthy granulation. Being unable to find any cause, as I had expected, I began with external examination. Patient was in apparently good health, showed flushed appearance on right cheek, with little swelling, but no fluctuation, extending uniformly over right lower cheek, but no discoloration or anomaly or disfiguration of face perceptible. The swelling extended from the angle of bone, especially at the insertion of masseter muscles upward and forward to first lower right bicuspid. On pressure there was pain below the first bicuspid internally, and following down, around and backward, marked about the groove for the facial artery below the third molar. This attracted special attention, and upon further palpation seemed to notice slight crepitation. I then grasped the jaw by the chin with the left hand to bring it in fixed position, and got hold with my right hand of the angle of the ramus, and then was able to produce a slight inward and outward motion with the posterior part of the angle of the jaw bone, producing at the same time slight crepitation. This motion was absolute from the fixed position of the remaining part of the jaw. I then concluded that I had to deal with a concealed oblique fracture, extending from the groove of the facial artery upward, between the first and second bicuspids. To ascertain this, I induced the patient to bite on a small object, which I had placed between the teeth over the fractured area, which produced severe pain. By placing my index finger along the lower ridge of the mandible, I felt distinctly when the patient closed the mouth a sharp edge just before the groove of the facial artery, which edge disappeared when patient opened the mouth, due to the removal of pressure from above, thus having assured the existence of a fracture.

I treated the case by having the bite closed, fixed articulation, and applying Barton's bandage, to keep the jaw at absolute rest. Nourishment was liquid, and was taken by glass tube, and phosphate of sodium and other lime salts administered to promote ossification. To prevent any absorption of infectious material along the fold of the mucous membrane or the alveolar process, which might arise, due to the suspended action of mastication, I advised the patient to wash the mouth very frequently with a weak solution of permanganate of potash. Immediately after the jaw was fixed, and motion prevented, the pain slackened and had ceased the next morning entirely, as the constant irritation of the broken fragments was stopped. Ossification had taken place two weeks later, and the bandage was removed.

This case seems to me somewhat interesting, and I bring it to the attention of the dental profession, for it shows how important it is to have our examination extended to the surrounding area, as this or a similar case may come under our care.

PROCEEDINGS OF SOCIETIES.

THE AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT ROME, MARCH, 1907.

DR. ANGELO CHIAVARO, OF ROME, READ A PAPER ON "PARADENTAL CYSTS."

He also gave a short communication on his experience with regard to the plantation of teeth. His communication was not for publication. It was illustrated by a large number of lantern slides, and shortly summarized it may be said that Dr. Chiavaro maintained that in implanted teeth the pericemental membrane entirely disappeared, the dentine and the bone becoming practically ankylosed.

Dr. W. J. Younger

wished to know whether Dr. Chiavaro had always found the firm condition in implanted teeth and whether only one section had been cut or several had been made.

Dr. Chiavaro

said he had made sections of replantation teeth, but not of implantation. They were all cases of replantation in dogs.

Dr. Younger
said he had attended a case a few months previously where a lady of about forty years of age had the centrals and laterals projecting. He corrected the position of the laterals, but did not know until much later that the teeth had been replanted for more than two years; yet they had yielded to the strain and had turned, as teeth usually turn in a lady of that age. With regard to replantation there was a certain physician in San Francisco who had lost three teeth in the Civil War through the bursting of a cannon. He implanted three teeth for him more than twenty years ago. The teeth had been out for five years. The central was disfigured by blacking of the enamel, but the patient said he did not care for that, as he wanted the tooth for its utility. Several years afterward the tooth split rather high up so that he could not utilize the root, but the loose fragment was very thoroughly attached and he removed the rest of the root and had it examined microscopically. It was pronounced by the microscopist a perfect pericemental tissue and there was no sign of absorption of the root. He had another case of implantation in Paris and two years afterward the bicuspid became loose. He told the patient it was a failure and she would not have any more done. He found he could reach down nearly to the apex of the root. He scraped it, treated it with nitric acid, and a year afterward the tooth was perfectly firm. He had many cases in which he was certain that the pericemental tissue must have been formed.

Dr. G. O. Webster
asked how there was proliferation of the socket and at the sides of the cementum of the root, because he could not understand how that took place if the membrane had entirely disappeared. If the cells were dead how could there be a growth into the side of the root?

Dr. Chiavaro
said that next year he hoped to begin some experiments on implantation of teeth, as he had had no experience of implantation. With regard to the ankylosis between the root and the bony tissue, the cementum in some places became absorbed and there were lacunae which were made by what was termed pericementitis atrophy. The inflammation of the bone was very slow and then there was a new formation of bone, but if the stimulation was slow, or if the bone was hard, there was atrophic absorption, the tissues died, and then

the white corpuscles of the blood took all the softened tissues away. In the bone there was what was called pathologically the lacunae of Howship, and the same thing happened in a tooth; there were erosions of the cementum and then of the dentine, and the pericemental membrane being the softest was the first to go. In the lacunae of Howship new tissue would occur and there was the action of the osteoblasts, which were always present in the bone when such processes took place. There were many projections of newly formed bone tissue into the dentine, and the tooth was kept in place by ankylosis with the bone tissue on account of the projections. That was proved by three facts. In the first place there was a special sound on tapping the tooth. In a normal tooth the sound would show there was a membrane between the two hard borders of the tooth and the bone; in the other case the sound was harder, showing there was no soft tissue betwen the two hard substances. Secondly a tooth had articulation in the socket and would move, but a replanted tooth would not move; it was almost impossible to take away a replanted tooth unless the bone was broken. Experience was now required to find out whether any other tissue had the same effect on the root, and whether the root could be kept in place by the same process, and by experiments it was hoped to prove whether it was a property of the alveolar bone to keep in place a root, or whether the property was common to all the tissues of the body including the regular bony tissue.

DISCUSSION OF DR. FISHER'S PAPER ON INSTRUMENTS AND CAVITY PREPARATION.

Dr. Wm. N. Cooper

said Dr. Fisher had gone over the ground so thoroughly that there was very little left to say in the discussion. Anyone who wished to examine the instruments could do so and Dr. Fisher would explain them further. He thought the Society was to be congratulated upon the paper and their good fortune in having Dr. Fisher as an exponent of the system, especially seeing how closely the paper followed Dr. Black's excellent paper at the meeting in Berlin. The paper carried out Dr. Black's ideas so thoroughly that the two papers had almost to be read together. It was really a demonstration. He had worked along the line himself and had used the same instruments, but either he did not find it necessary or he had not the courage to carry his extension for prevention as far as Dr. Black had done. The idea was to bring the cutting edge of the instrument in direct line of the shaft so as to lose as little power as possible. It had been said that the instruments were too large, but when the work was taken up seriously that objection appeared to vanish. The instruments were so well balanced and so well made and were worked out on such a definite system that they were absolutely the only certain instruments on the market within the reach of the dental profession made on a dentally scientific basis. It was necessary to be careful not to use too much power. With regard to the direction of the enamel rods, the importance of the relation of the enamel rods to the walls of the cavity and the union of the filling and the cavity could not be overestimated. If the enamel rods were cut across and small prisms left without proper support in time they were sure to break away under mastication and many good fillings would be lost on account of that little failure. It was especially true with regard to the application of inlays. In an inlay it had been demonstrated—and he believed Dr. Jenkins admitted the fact—that there was a washing out of the cement between the inlay and the cavity margin which would be just as deep as the width of the space. Everybody tried for an absolutely perfect union, but did not get it; there was a small line of cement and that line of cement would dissolve out to a depth equal to its own width. If the enamel rods were not properly cut in direct relation so that there were no short ends left, as they dropped out they increased the space and the washing out of the cement went on until the edge of the porcelain was exposed and broke away. It was not a question of the porcelain edge strength, but the preparation of the cavity, due consideration not having been taken of the relation of the enamel rods with the edge of the cavity. The enamel rods had dropped out, the cement had gone, and the filling had been a failure. Dr. Fisher never used soft tissues for a finger rest, but he himself had sometimes to do so. In working in lower molars, by grasping the instrument further back, and pressing the third and fourth fingers on the chin, a tremendous power was obtained, the mechanical law being that the longer the grasp the more the power. Power and command were not synonomous. The further one went back from the angles of the instruments the less command one had, although one had more power. Therefore, if the rest was used on the chin the greatest care had to be taken. With regard to the preparation of cavities involving the cutting edge, he did not do it unless he was going to use porcelain; with porcelain it was necessary to sacrifice the cutting edge in order to get strength. Without bulk there was no strength in porcelain. He had not yet made up his mind to the sacrifice of all the tissue sacrificed by Dr. Black, and therefore he used a small gold anchor screw and built in in that way, and he had obtained excellent results. In one case he put in two proximal fillings and very foolishly put one in without polishing it or taking any precaution, using the first as a matrix for the other. When he wished to separate the teeth he put on a mechanical separator to pull them apart, and not realizing how much pressure he was using, he found the two fillings had consolidated together and one of the fillings broke away leaving the anchor screws.

DR. J. W. GALE

said the exhibition of instruments was a most instructive one. Since Dr. Fisher had been present it was a great inspiration to see the methods he used in his practice of preparing cavities and the painlessness of the use of the Black system of instrumentation. Many people relied on burs and most people abused the engine as well as the patient, but the work could be much more easily done both for the operator and patient with the splendid set of instruments shown and the system Dr. Black had devised.

CHICAGO-ODONTOGRAPHIC SOCIETY.

Tuesday evening, September 17, 1907.

Meeting called to order by the President, Dr. F. E. Roach, at 7:50.

THE PRESIDENT:

Before taking up the regular discussions, we will hear from Dr. Rich, who is here to explain about the Public Health Defense League. This is a work in which we should all have a deep interest. It is of vital importance to us all, and as members of the dental profession, I think it behooves us to all become affiliated with this movement. It has been endorsed and adopted by the medical profession. Dr. Rich is here for the purpose of explaining some of the purposes of this league, and we will now have the pleasure of listening to what she will say.

Dr. Rich:

I am very glad indeed to have this opportunity to tell you something about the League. I think possibly the general object you all know from the circulars inclosed in your Odontographic Society Bulletin. I have been asked a good many times just what direction this work was to take. The little circular sent around gives a rather definite idea and yet a broad one.

Every one who has a membership has the right to ask the league to carry on an investigation in any direction at the expense of the association. The League was incorporated in New York last April as a result of the work of the New York Medical Society for the preceding 18 months. They had made investigations in a great number of cases, and 130 injunctions had been obtained and in some cases penitentiary sentences imposed. As a result, a large mass meeting was called and from all over the country different interests were represented. This League was then incorporated—the National Public Health Defense League. Since that time about six leagues have been formed, in Pennsylvania, Missouri, Massachusetts, Illinois, Ohio, and the New York State League, and six other cities are waiting. This is of national scope, and each state will help the other states, and each injunction will act as a precedent in the other states. The membership is a good many thousands, and since starting work here the 1st of July we have over a thousand members. The different associations here have endorsed it, the Medical Society, both the state and the local. Many other professions have also endorsed it. The Governor is a member, and we have representative men from all the different professions. I should like to make the suggestion that you as a body endorse the work of the National Public Health Defense League. We have the right to appoint our own board of directors, and if this society joins it they will have the same consideration as the others. If you will appoint a committee they will confer with the chairman in regard to the members to represent their interests in the Illinois Board.

We are interested that you should give us your membership. The fee is one dollar a year, and that payable after a few weeks. We want your membership, support and co-operation. It is the public primarily who should be interested in these things. They will become interested in it when the men they trust have endorsed it. We hope you will give us your support and interest and co-operation. Thank you very much.

Dr. C. N. Johnson:

It gives me pleasure to add one word in regard to this League, and make a plea before the members of this society for their hearty co-operation in the movement. I have not had an opportunity to look as far into this as some others have, but so far as I have gone I am favorably impressed with the movement, and I believe it is destined to carry out many reforms. It puts a stop to many abuses which heretofore have seemed to sail along before the public without danger of exposure or interruption.

I wish Dr. Rich had told you about the number of convictions that have been obtained in New York City, about 130, I think. That means something. We are getting at the matter in the proper way, and we must back them up by public sentiment, and to bring public sentiment up to the point where it will be effective, we must lend the support of our best organizations to this movement. It has been endorsed by the medical societies, by all the representative associations before which the movement has been placed, and I should very much dislike to have the dental profession behind in any philanthropic movement.

Therefore, I move you that the Chicago-Odontographic Society thoroughly endorse this League. The motion was seconded.

Dr. Thomas L. Gilmer:

I heartily second Dr. Johnson's motion. I believe the Public Health Defense League is a great thing for us, and a greater thing for our families. If we will co-operate individually and as a body with this organization it will add much for good in this community. I have in my hand a copy of the Illinois Dairy and Food Law. I wonder how many of you have read it and know what a good law we have in this State. You all realize, even with good commissioners, that unless there is co-operation on our part the law cannot be carried out to its fullest extent with the greatest possible good to all. If I understand the intention of the Public Health Defense League, one of its principal aims is to aid in the prosecution of such laws. The individuals can observe here and there violations of the laws which may not come under the eyes of the commission, and report to that body. I wish each one of my hearers would write to the Secretary of

State and ask for copies of the Illinois State Dairy and Food Law in order that he may know wherein he may help for its enforcement.

I am a member of the League myself and I would like to see not only this society endorse it, but each of its members become identified with it and help the League to ferret out all of these quack remedies and adulterated foods and medicines.

The motion was thereupon put to vote and carried. On motion of a member, duly supported, the Chair appointed a committee of three to take action on the foregoing motion.

The Chair later appointed to act on this committee Drs. C. N. Johnson, Thomas L. Gilmer, and G. W. Dittmar.

It was announced that Dr. Rich would remain in the rear of the room to issue membership blanks.

"GOLD INLAYS AS APPLIED TO DENTISTRY"

was the subject of the symposium of the evening. Papers were read by Dr. E. M. S. Fernandez, Dr. George H. Haskins, and Dr. Victor H. Fuqua.

DISCUSSION.

Dr. W. H. Taggart:

It gives me much pleasure this evening to hear so much said about the new method of making gold inlays. A year ago no such talk as this would have taken place. It would have been a discussion of matrices. It seemed to me about that time while working on this process as if we must make some new departure from these methods, or we would not make any further progress. In other words, perfection had been reached in doing it by the matrix process, and at that time no such talk as this could have taken place. To-night you have heard nothing of the matrix, whether it should be 36 or 28 gauge, whether gold was to be used or platinum. It is a great pleasure for me to think this time has come—not personally, but for the good of the profession and of humanity.

This process has revolutionized my practice; that is, the inlay, the crown and bridge work. It has not changed my methods in root canal work, pyorrhoea, etc. The young man cannot afford to ignore this new process; and the old man, who is getting along in years and who is feeling the burdens of an active practice, doing his work by the older methods and using his vitality—to him this new method is a God-send. It makes it almost possible without eyes to do with the sense of touch and get results that he could not do when his eyesight was the best. With this finger technique we can put the mass of wax into the cavity, and with my fingers I can make a better fitting inlay than I could ever do with a matrix in my life. Now, the artistic part, doing that out of the mouth and without the strain of having the patient to contend with and moving, and working in such material, it seems to me essentially an old man's process, although the young man cannot possibly ignore it if he wishes to give his patients the best service.

Dr. Fernandez in his paper referred to pyorrhea teeth. We all know the difficulties of uniting two pyorrhea teeth. I have often tried to put an iridio-platinum bar between them and fill around with amalgum, feeling I could do better than with gold because it would be impossible to get the gold in properly under the bar. They were failures because the strain was too great to have that process sustain the carrying load of the jaws and the amalgam would check and the gold fillings would come away.

With this process it seems possible with two or three pins in each tooth and the simplest kind of cavity preparation to unite the cavities as one, and save the interproximal space. It will hold two teeth together and also make the abutment of a bridge. Formerly we would trim the teeth down and make a crown to get a strong enough abutment. With this process we can weld and unite them and the attachment is stronger than any shell crown could be. The uniting of pyorrhea teeth is a pleasure and I like to see them come, it is so easy to do it.

In bridge work it has changed my methods. Of course you expect that I am an extremist; but my extreme views have been borne out by the facts in the case. They are extreme only to the man who suddenly wakes up from a dream and finds himself ten years behind in the march. But to the man who has gradually kept in touch with his profession and gradually grown with it, this is but a step in advance. While it seems an innovation, at the same time there is nothing in the past but absolutely fits into it, so that all the technique a man has gained in using other methods is a help to him in this, and there is very little more to learn or anything but what he can pick up in a few minutes.

It has been over a year since I have bought a piece of solder for bridge work. Formerly I bought ten, fifteen, twenty or twenty-five dollars' worth of solder at a time, and I have absolutely not bought one pennyweight of gold solder for the past year. All my bridge works, all my abutments, all my backings, etc., are cast and with one-third the time, and only the past month I put in a bridge of nine teeth, with porcelain facings, and not a drop of solder in it. That proves that this process is able to revolutionize our methods. I can make a five or six tooth bridge in one-third the time I ever did before.

Dr. Fernandez spoke of the weakness of cement. That in former times was something of a drawback, but with the newer methods it is less a drawback than formerly.

In one way I am glad Dr. Ames went out of practice because it made it possible for operators to get a chance to see some of the inlay work he had been doing. The cement was not the weak part. He made these fillings the best he knew how, and there they are today. I have never seen one that has decayed about it. I have seen cavities in other parts of a tooth, but not around the inlay. I think it a blessing for us that Dr. Ames stepped out when he did and made it possible for us to see the results.

I have no quarrel with the matrix. If it were not for it and its growth we would not have all this perfection in inlay work today. We have to commence somewhere. A man must live up to the best of his day, and the men who have worked with the matrix and have learned to do comparatively perfect work, it will stand them in good stead when they get to work along other lines.

Dr. Haskins speaks of having to cut away more for an inlay than for a foil filling. I hardly believe that, because an inlay can be put into a cavity with very little different preparation than necessary for a foil filling. While I do not wish to advocate making a cast inlay in a cavity with an undercut, as a matter of fact you can. You could not with a matrix, because you could not get it out of the cavity, but with a wax inlay you can actually make it in a cavity with some slight undercuts. In taking out the mass of wax if there is an undercut it will drag it away and allow the wax to come out. The pushing in and out of the civity will wear the wax down. Often this is an advantage, because sometimes in a cavity where the undercut is slight, to keep on cutting until you got rid of the undercut you might sacrifice much good tooth substance, and yet the undercut is so slight you could put in a layer of cement.

Some one of the gentlemen alluded to the pain of excavating.

One of the very decided advantages of inlay work is the fact that it is practically painless dentistry. As a rule in every mouth we put on a rubber dam, and while we know and have been taught that the cavity will be excavated with less pain in such instances with steel instruments if the cavity is dry, at the same time the friction is so great from the bur that there is great heat induced. I have learned more about that in the past year than I formerly dreamed of. In preparing cavities out of the mouth and holding the teeth in the fingers, I have been surprised how often I would have to drop the tooth because it hurt my fingers. That has been taking place in teeth in the mouth, and even in pulpless teeth there can be pain. Consequently doing it by the wet method reduces the friction in a way you can't get with steel drills in a dry cavity.

Dr. H. J. Goslee:

Along about January of the present year I caused considerable criticism, or my remarks did, and to these remarks at the present moment I wish to make a brief reference. They were to the effect that the inlay methods of the present day had practically revolutionized the practice of dentistry. The criticism was severe on the apparent radicalism of these remarks. Many of my best friends and prominent men in the profession said, "Goslee is either rapidly becoming a radical like some of the other good men in Chicago, or else he is such a good friend of Taggart that he cannot see anything but inlay work." But at present I believe all of you will agree with the apparent radicalism of that time, and that it has been swept away by the results which have been accomplished. I am free to say to you that for more than three years a large proportion of my work has been along inlay lines. I am not a radical, but I have been at it, and not until within the last few months have I been able to grasp its fullest possibilities, and Dr. Taggart has made it possible for all of us.

I do not believe the use of cohesive or non-cohesive gold foil will ever be abandoned in the filling of teeth. In that I am in full accord with my friend, Dr. Haskins. But I am just as firmly of the opinion that we will always and forever use the inlay, and it is simply a matter of our own individual judgment as to which we select for the individual case. I cannot conceive a greater calamity to me than to attempt to practice dentistry without the inlay method. Since I have been able to fill teeth by this method more or less successfully, or, more properly speaking, to apply and employ it more or less successfully, I have saved many teeth that would otherwise have been crowned, and if the inlay does nothing else for us than to diminish the vast number of teeth formerly crowned, it will fill a great field of usefulness. In addition to this it enables us to apply bridge work without crowning teeth where it would have been absolutely necessary heretofore.

I have not much to say at the present time with regard to Dr. Taggart's method, because I have addressed this body on previous occasions on that subject, but it has enabled me to do better work than I have ever done before, and that applies to every dentist practicing. Every dentist in Chicago should be proud of him, although some have attempted to say it is not Dr. Taggart's method.

Dr. Rose, of Spokane, Washington:

The first time I had the pleasure of hearing an explanation given by Dr. Taggart was at Jamestown several days ago. I have tried this work and I feel it is a very good method of making inlays and it will revolutionize the inlay system. I am very glad to be with you all tonight.

Dr. G. Walter Dittmar:

From the lack of enthusiasm in the discussion of this very interesting subject I believe that many of you are guilty of the same offence that I am, but hate to say so—you have a machine for casting gold inlays.

I will acknowledge that I have a machine with which I have been making gold inlays; however, early last spring I promised Dr. Taggart I would take one of his machines and I will certainly do so, when they can be procured, regardless of the one I have. I never would have made the contrivance I have had it been possible to purchase Dr. Taggart's machine, but like many others I thought I could not wait longer to put in practice this new process. The casting process is so simple and accurate if details are carefully watched that I get results that can not be compared with my older methods. I want to say, however, that with the machine I have, I have not always obtained absolute results. I have had some failures which I hope I will avoid when I use Dr. Taggart's new machine.

I want to call attention to one thing Dr. Fuqua said in regard to the position of gold fillings and gold inlays. If I understood him correctly, he said in substance that he could not see why some gold foil radicals advocated a gold foil filling in a mesio-occlusal cavity of a molar and a gold inlay in a disto-occlusal cavity; that if one was good in one place, it ought to be equally so in the other. That is where a great many dentists make their mistake. A gold foil filling is indicated only where it is possible to direct the force of the plugger in a direction to pack and condense the gold, by mallet force, against the walls and margins of a cavity, and therefore I believe it is possible to place an absolutely perfect gold foil filling in a mesio-occlusal cavity of a molar where it is practically impossible to do so in a disto-occlusal cavity, especially if much of the disto-lingual must be restored. Therefore, the gold inlay is especially indicated in this distal cavity, though I acknowledge that I now place inlays in the mesial cavities of both molars and bicuspids since I make them by the new process, for it saves so much hard and disagreeable work for both the patient and myself and I get beautiful results.

In conclusion I want to second most heartily Dr. Goslee's tribute to Dr. Taggart, all of which I agree with in all sincerity.

Dr. Atkinson, of Christ Church, New Zealand:

It gives me much pleasure to be here and say a few words. I have come from New Zealand to take back something from you people here, and Dr. Goslee has undertaken to teach me something if I am capable of learning. Some of you may not know where New Zealand is, but it is a small place of a million inhabitants, and we pride ourselves on trying to keep up with the times, and we come to America to learn the latest things in dentistry, although you might think I would go to England; but our experience is that we have to come to America to learn the latest things. A great many New Zealanders have graduated in your colleges.

I cannot say much about inlays, except that I will take them back and introduce the system in New Zealand. Dr. Goslee is very kindly teaching me how to make them, and I hope I will be successful in my country, and I think Dr. Taggart's name will be well thought of there as it is here.

Dr. Scherer, of Texas:

I am not here for any purpose but to learn something about the subject which has been discussed so thoroughly tonight. When I know something about it I am going to take it back to Texas and talk it up as much as you do here in Chicago. I think the credit is due to Dr. Taggart for the machine he has invented, which will simplify the process of inlay making, and I think the profession owes him this acknowledgment.

Dr. W. O. Felmann:

I have nothing but praise for the man who invented the process. The inlays I have been making by the burnishing method I have had good, bad and indifferent results, but when I compare these with the cast method they are out of date, and I shall always look back to the time when Dr. Taggart showed us the method of casting gold.

Dr. C. E. Bentley:

It seems to me a violation of good form at this hour for me to attempt the discussion of the cast inlay, because the ground has been so thoroughly covered that any talk by me would be but a surplusage of words without any new ideas; but I want to say that the experience I have had with cast inlays, in something like five months' time, has completely revolutionized my practice. So much am I enthused with this method that I am being constantly reminded of a statement I heard Dr. Wassall make in the Chicago Dental Society several years ago. He said that the gold plugger was practically of no use in his practice. We were astonished and put him on the pinnacle of radicalism, and you know we crucify the radicals as a rule. Now we are coming pretty close to that advanced step made several years ago. I have not put a gold filling in a tooth in my office for the past six months, and I don't see the necessity of using the pluggers any more except in such cases as cavities in lingual pits of the six anterior teeth or the pit cavities of the sulci of the molars and bicuspids. What is the use? It occurs to me you get better protection by far with cast gold inlays.

Have you noticed how generally, in putting in inlays of gold and porcelain, that after they have fallen out there is never any recurrence of decay? The whole surface of these cavities is protected by a layer of cement. Is there not a preserving quality in that hermetically sealed joint that you cannot get with the best malleted filling that you can put in? That is a question, not a declaration. Dr. Taggart, in his discussion covered the ground, but I want to give you a few instances where it has revolutionized my practice.

Six years ago a gentleman came to me for work and had two disto-occlusal cavities in the second upper molars of both sides that extended up above the gum. I was unable to get the dam over the cavity and could do nothing but insert amalgam fillings. I restored the interproximal space and retained the contact as best I could with these fillings. A month ago that gentleman came in and complained of food being retained between the teeth during mastication. I found that a facet was worn on the amalgam filling and instead of a globular form I had a flat surface by reason of the natural movement of the teeth. I took out those amalgam fillings and made a wax inlay and restored the contact point just as I wanted it and made inlays that were absolutely perfect, as far as I could see, and charged that man four times as much as for the amalgam fillings, and he told me it was worth the price because so satisfactory. That could not have been done with any other form of filling. A burnished inlay could not have done it.

Another case was a gentleman with a fractured lateral incisor, where the labial fracture extended above the process. There remained the lingual wall of the tooth. I packed that gum with gutta percha until it exposed the uppermost portion of the fracture. I took an impression in wax, also including the surface of the fractured root, then placed a pin into the root as far as I could, I cast the three in one. On that foundation I adjusted a porcelain faced crown, and there are a few in this audience who saw that work, and I am satisfied it could not have been done in any other way.

These are some of the things that have revolutionized my practice, and I am prone to say with Dr. Wassall that we are approaching the era when we will use the pluggers less and less.

With reference to some things alluded to delicately by Dr. Goslee. No man ever created an innovation but what he was crucified or villified. When you interfere with the vested rights or customs of any condition of affairs you must stand the brunt of criticism. Darwin gave us a theory that has revolutionized scientific thought, and never was a man more villified, and we could mention others. It is no small wonder that this gentleman who has flashed across the dental horizon like a meteor—it is no wonder that he should be criticised. It is the fate of all men who create. But instead of crucifixion, I think his has been a case of glorification and praise. We want to pay tribute to this creative genius who has given us something the like of which we know of nothing in dentistry to compare it to. He is a creative genius and is worthy of a crown while living, and I hope he will live long enough to receive the just reward which I know will truly be his.

Dr. A. E. Mattison:

I only wish I had known of it two years ago, that would have saved me two months of work and given me better results. I believe that the cast inlay system is going to revolutionize the practice of dentistry, and all owing to Dr. Taggart.

The Chairman:

The subject is "Gold Inlays." It has resolved itself into cast inlays and Dr. Taggart. It seems to have thrown a damper on the majority of the dentists by reason of the fact it has turned as it has, and there are few able to discuss the subject properly.

Dr. E. J. Perry:

It is impossible for me to see at this stage of the game how any one could get up a symposium upon the subject of gold inlays, when there is but one way to make them. Of course I have not had any experience in cast gold inlay, not having had a machine. I have been rather close to my old time friend and the discoverer and inventor of this method of making inlays, and he has made a good many for me. I can say this, however, that in my practice it is almost the most important feature in it, the casting of gold in the form of inlays, and the multitude of things that can be done with the cast method has revolutionized dentistry for me.

Dr. A. D. Black:

I would say a word on the Dr. Taggart phase of the subject. I have wondered, as I have thought about these cast inlays, how many of us realize the position that Dr. Taggart occupied before he presented this subject to the dental profession and afterward, as compared with the position he might have occupied before and afterward had he so chosen. I am speaking now of Dr. Taggart's fraternalism, as Dr. Perry referred to it, as compared with what Dr. Taggart might have made from this cast inlay affair as a business proposition. He did not wait until his machines could be made before he gave it to the profession. He could not give it to us quickly enough to suit him. He did it long before his machine was sufficiently perfect to put on the market. What a different position could he have been in, from a business standpoint, had he said nothing until his machine was absolutely perfect! I can't help turning that over in my mind again and again; the difference in the way the members of the profession feel toward each other, and the difference in doing something for the good of the general public, as compared with the feeling in the profession not many years ago. Dr. Taggart could have said nothing until he had several thousand of these machines made and ready to put on the market, and he could have sold them in a month. But he set aside the financial proposition. I hope the dental profession of this city and every other city will fully realize what Dr. Taggart has done, and I certainly hope with all my heart that he will get not only the glory which is due him, and a whole lot besides glory that is due him.

Dr. Fernandez (closing discussion):

Dr. Taggart has not a better friend than I am, neither has his system of Casting Gold Inlay work, but as his casting machine is not yet in the market, we are not prepared to discuss that method; but I must call the attention of the gentlemen to the fact that "Cast Gold Work" is not the subject of the evening, therefore most of the discussion tonight has been entirely out of order.

The subject of the paper this evening was "Gold Inlays as Applied to Dentistry," and not cast work.

In regard to the cement, I wish to repeat that we have not the ideal cement for inlay work, and we must keep asking for it in order to get it.

Dr. Haskins (closing):

In regard to the amount of cutting necessary for inlay or gold filling. Dr. Taggart does not see much difference and yet in my hands there is a great deal of difference. We are evidently misunderstanding each other, the undercut which I had in mind was on either or both labial and buccal walls and he must have been thinking of axial wall only.

Dr. Victor H. Fuqua:

There is little that I can add to what has been said in the discussion except a word about cement. Not a good word has been spoken about cement this evening. Many inlay workers attribute all their failures to the imperfect cements, but I have observed that my own failures have been from faulty cavity preparation and imperfect adaptation to cavity margins.

With the cements we have today there is little to complain of as regarding permanency in gold inlay work. Just so long as gold inlays were set in saucer shaped cavities and a great wide ditch left between inlay and cavity margin for cement to fill up there can be nothing but failure, but with a perfect fitting, well seated inlay our present cement can be relied on.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held April 9, 1907, with the President, Dr. George W. Cook, in the chair.

Dr. J. H. Woolley read a paper on "The Voice in Its Relation to Prosthesis."

DISCUSSION.

DR. E. J. PERRY:

I want to congratulate Dr. Woolley on his very excellent presentation of this subject. Nothing to me is very interesting that is not practical and useful. I know full well that the acoustics of the mouth are seriously interfered with in the construction of an artificial denture. Any obstruction in the roof of the mouth is likely to interfere with articulate speech. I never made any particular effort to correct the speech of a patient by shaping the plate or by arranging the teeth. The arrangement of the teeth in my practice has always been done with reference to the features and to the occlusion of the denture. The plate must have some thickness; it must be different from the tissues which it covers; it must be hard, not soft and yielding. I simply say to my patients that they will have to get used to wearing a plate. I do not believe that it is possible to construct an artificial denture so as to correct the defects of speech, and at the same time to have in mind the physical organization of the individual. We must hew to a definite line. People without artificial teeth have defects in speech.

I think the consideration of this subject is interesting, but I believe it is absolutely theoretical. I understand that there is a different sounding-board in the arch from what nature made, but how are you going to arrange to make an artificial denture and not have a different sounding-board. The lingual surface of the teeth can not be lengthened beyond a certain point. The sounds must come against these substances and they must be changed. The patient, by the use of the lips and tongue, must form articulate sounds as the changed conditions indicate. I think that a loose denture, one that is ill-fitting, may be responsible for sounds going in under the denture, and thus embarrass the patient. This may be overcome, of course, by making the heel of the plate sharp, not blunt. I think that is an important factor in assisting the patient to speak properly. We often see vulcanized plates finished up with a very thick edge at the heel, and I have often wondered how an operator could put such a plate into a mouth. I always make the edge as sharp as possible, so that the air that passes over the roof of the mouth will not meet with any interference at this point.

I recently put in a removable bridge for a lady, with a saddle all around, from the first molar on one side, to the third molar on the other, using Roach's attachment. She had worn a rubber plate. I took the plate out and that deepened the arch. When I put the saddle in that built the alveolus down further and deepened the arch still more. She complained for a long while that her voice was changed, which I suppose was due to changing the auditorium. I do not know whether she overcame it or not, and I was at a loss how she could overcome it. Dr. Reid suggested that she read aloud to herself.

The paper is interesting because it is on prosthetic dentistry, and written by a man, a conscientious worker and an eminent thinker, who does not devote all his time to prosthesis.

Dr. J. H. Prothero (by invitation):

It is a pleasure to be a guest of this Society tonight. Dr. Woolley's paper shows that he has given this subject much thought and that his statements are based on the experience of years. It is a subject that is being studied by prosthetic men in different parts of the country, one that is beginning to create considerable interest everywhere. Dr. Woolley is to be congratulated for presenting a paper on the subject at this time, because no such paper, to my knowledge, has been read before the Chicago societies.

The tone of the voice can be very greatly modified by the form of the denture which is fitted in the mouth. I have had enough experience to confirm me in that belief. Only two weeks ago I had a patient who had the superior maxilla removed for carcinoma. This left a large opening in the hard palate, extending through to the nasal fossa. I constructed a denture and arranged the teeth so as to occlude with the lower teeth and fitted the appliance into the mouth. When the woman came to me she was unable to speak distinctly. After conversing with her for a few moments with the denture in place I noticed that there was something wrong with her speech. I knew that it was not due to incorrect contour, because I made every effort to give the palate its correct curvature. I found, however, that the coutour of the denture back of the anterior teeth was not correct. I removed the denture, built on wax at the point indicated, removed some opposite the cuspid teeth, and by a little manipulation I was able to correct the defect. I have done that time and again, in different cases, always endeavoring to do what I could for my patients in this field, believing it to be a duty that I owed them. Dr. Woolley has given us the results of his experience, but he has not enlarged on the subject as much as he could.

The subject of acoustics of the mouth has been thoroughly covered by Helmholtz, Tyndall, and more recently by Professor Root of Columbia University. In the writings mentioned the action of the vocal cords in the production of sound, the parts that influence or contribute to the quality of the sound, such as the flexible palate, the hard palate, the teeth and the tongue, are all clearly set forth.

The practical side of this subject, however, consists in constructing dentures that will not by reason of their form or coutour interfere with normal sound production.

As a rule, artificial bicuspids and molars are too narrow buccolingually. Now, if in arranging the teeth their labial and buccal surfaces occupy the same position that these surfaces of the natural teeth occupied, the result will be that the arch from the lingual surfaces of the bicuspids and molars on one side to the opposite side will be wider than normal. Therefore, in the formation of certain sounds the tongue must form a new habit in the production of sound or normal speech will be impossible.

Usually thickening the base plate along the area mentioned will overcome the difficulty, but care must be taken not to make the addition too bulky or a similar or even worse condition may result.

I wish to compliment Dr. Woolley on the effort he has put forth. He is working along the right line, and I hope in the near future he will give us a broader and more complete exposition of this subject.

Dr. W. V.-B. Ames:

I have often wondered that people manage as well as they do with the dentures we put into their mouths. It shows the adaptability of the tongue. I think there is a great deal to the subject, and I am glad that Dr. Woolley took it up. I am especially impressed with the idea of taking an impression before the teeth are extracted, because in that way we are enabled to reproduce the original conditions. When I was doing some of this work I tried to carry out the lines of the vault of the arch, so as to make acoustics possible. The thing I used to give most attention to was to get the proper length so as to avoid the whistling and hissing sounds.

Dr. J. G. Reid:

I have never had any experience with artificial teeth in my own mouth, but I cannot conceive of anything that would be more imaginary than to attempt to do what on the face looks like an impossibility. Anyone who has been unfortunate enough to lose the natural teeth also loses much of the natural tissues of the mouth that are absolutely essential to acoustics. How we can replace by artficial means what has been lost certainly is a very perplexing problem. Theoretically, it is a nice thing to discuss, but to overcome it in practice is quite another matter. The subject is interesting, of course, as all theoretical discussions are, but I cannot view the matter from any other standpoint than that of theory. So far as I can see, it is not practical.

The essayist has given this question a great deal of thought, and Dr. Prothero said that he has been able to do what Dr. Woolley has spoken of; but I doubt that it can be done in every instance. If that is the case, it cannot become practical.

Dr. E. A. Royce:

The chart showing the movements of the tongue in making articulate sounds shows that Dr. Woolley has spent considerable time on the subject and as far as he has gone he has dealt with it very well, but it seems to me that the most important point has not received the attention it should, and that is the play of the tip of the tongue upon the lingual surfaces of the oral teeth and the anterior portion of the hard palate.

The lingual surfaces of the upper incisors are concave and about half or three-fourths of an inch back is quite a prominence of the hard palate, the mucous membrane fills in back of the teeth so as to form what might be called a double curve between the points of the teeth to the center of the hard palate. The play of the tip of the tongue upon the teeth and this prominence is one of the most important movements in speech, and when we can restore this portion of the mouth to the form given by nature we will have made a long step toward the restoration of the voice to our patients.

Dr. E. J. Perry:

We all know that the arch of the mouth is formed by the hard palate, the alveolar borders of the jaws, and the lingual surfaces of the teeth. When the teeth are extracted, say, fourteen or sixteen, the alveolar borders are absorbed after six months or more. The roof of the mouth remains unchanged. The hard palate is just the same as before, hence the patient with an edentulous upper jaw makes those peculiar sounds because the arch has been destroyed. We can restore these alveolar borders; the teeth can be placed in the position they should occupy, but we must put over the palate a plate. That lowers the arch, and changes the whole thing. That patient's mouth is not the same. We can do much to remedy defects, but we can never overcome the difficulties arising from the placing of a plate on the hard palate, no matter of what material it is made. That is our chief trouble, the auditorium of the mouth has been changed.

Dr. Reid:

Why is it that people have worn artificial dentures as thick as a stove-lid, and they made better sounds than they did when they had the natural teeth?

Dr. Perry:

That is not the case.

Dr. J. E. Hinkins:

I want to congratulate Dr. Woolley. He is an operator who does not confine himself to prosthesis, as many do. He spends most of his time over the chair filling teeth. I know little about the subject, but I can see that there is a great opportunity here to do good. It is a great field for development. All it needs is work.

Dr. C. N. Johnson:

I am pleased that Dr. Woolley has brought this subject before the Society, and I hope that he will work it out on a scientific basis, and give us something in a second paper that will lead to a practical application of the theories he has expounded. With the limited experience I have had in inserting artificial dentures I am not very hopeful of any formulation of a system which will give us a scientific basis on which to regulate this matter, and carry it out in every case. There is an individual idiosyncrasy in every patient, and I believe it is not possible for any man to predict exactly what kind of a case he is going to have. I was impressed with what Dr. Prothero said, that he inserted a trial plate and studied the patient with the plate in place. That is the only basis on which we will ever work out a scientific method for the regulation of sounds in the use of artificial teeth.

There is nothing I know of connected with the practice of dentistry that is so intricate as the impressions made on people by artificial teeth. You may place an artificial denture in one mouth, and if the teeth extend down below the plate so that the patient can feel them with the tongue, there is a complaint. The next patient will complain that the plate is too smooth; that the teeth do not feel like natural teeth, and so on. You cannot predict which patient you will have. You must educate every patient and study the plate and the idiosyncrasies of the patient.

It has been truly said that when an artificial denture is placed in the mouth it changes the arch, and the marvel is that people are able to articulate as perfectly as they do with artificial teeth. But some people will never articulate perfectly with artificial teeth. One of our most noted actors always displayed to the audience that he had artificial teeth. It may have been true that the teeth were not inserted properly, but every utterance of that man showed that something was wrong with his enunciation. People complained of his losing his voice, but it was manifest that he was struggling very hard with an artificial set of teeth.

There is another thing to be considered, the adaptabilty of human nature to change of conditions. Some people are more adaptable to changed environments than others. I had a lady come to me some time ago wearing a full set of artificial teeth. She had been to her dentist requesting a change in the teeth, but he felt that he could make no improvement in them, and refused to have anything to do with them. She finally came me complaining of her inability to enunciate plainly. She thought that the reason was that her tongue did not have room enough. and suggested that I make the lower plate wider in the arch. It was not that that was the matter with her, but her jaws had become absorbed, and came together closer, and that was crowding her tongue. I widened the bite a little, and cut the lower plate out, so that it had a cavity on the lingual surface. She put it into the mouth and experienced immediate relief. It is that study of the individual tendencies and whims of people who are wearing artificial teeth that is the essential point.

If the discussion of this subject has taught us one thing, it is that our greatest duty is to save the natural teeth, so that our patients do not have to wear artificial teeth. We cannot always save the natural teeth, but the more our energies are directed to saving them, the better service we will perform. If teeth will decay, we still have crown and bridgework, and the energy of the profession should be directed along these lines more fully than it is today. There is a material change in the profession, and it is very encouraging, but we must have artificial teeth, and I welcome this investigation made by Dr. Woolley, and I hope that he will bring the practical application of this paper to us at a future time.

Dr. George W. Cook:

There is a tendency to call a thing theoretical when we cannot see a practical application at first glance. This matter will be practical sometime, but at present the theoretical side of the subject is the one that we can study with most benefit. In that way we will evolve a practical idea in the course of time. We may discover another world, as did Columbus. Dr. Royce illustrated several points that were very interesting. It taught us all something, and showed us at least that there are many points worthy of consideration which we are inclined to think too theoretical. I got some practical ideas out of what he said. The theories of tonight probably will be in practice twenty-five years from now. So that Dr. Woolley has done well to bring this subject to our attention, and the discussion has brought out many points of value.

Dr. Woolley (closing the discussion):

It seems to me that any subject newly brought forth, although it is not original, ought to be looked on in the sense of there being something really worthy of consideration. I have not laid down any rules and the purpose of the paper was to show the natural functions of the teeth in the production of articulate sounds. Carry that out in the study of artificial teeth; work it out in the same way as nature does. You must study your cases; you must shape the dentures until the patient can produce certain sounds. In one patient's case I was one whole day trying to restore the voice of a singer, who for a number of years had worn artificial teeth without being able to produce certain sounds in the higher register of her voice without huskiness. After repeated attempts, I succeeded in having her produce all the sounds that had been lost. What I forgot to embody in my discussion was that in studying voice production we must be careful in claiming too much, "for definitions can only be stated approximately. There is no distinction, physiologically considered, between some vowels and some consonants, consequently we cannot dogmatically state that any definition can be laid down "that would separate the whole of the one class from the whole of the other.

I shall attempt to give in my next paper No. 2, "The Functions of Artificial Teeth in the Production of Articulate Sound." Hoping for an unprejudiced hearing, bearing in mind what an author on Voice Production says, that he was convinced that in art as in all else there is but one ultimate court of appeal; to the scientific, the demonstrable—to what lies at the very foundation of human nature.

OBITUARY.

MRS. J. M. WALKER

Was born in Canandaigua, N. Y., in 1836, and died at her home in Waveland, Miss., November 7, 1907.

Mrs. Walker was an honorary member of the Southern Dental Association and the State Dental Associations of Mississippi, Alabama and Georgia; also editor of the Practical Points Department in the *Dental Brief*. She contributed many articles to the New Orleans papers and was the authoress of a number of essays, stories and poems. She wrote much for the profession and no woman, and but few men, were better versed in dental literature.

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Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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EDITORIAL.

THE USE AND ABUSE OF THE TOOTH BRUSH.

It is without question a fact that in the majority of instances the teeth of individuals are not kept sufficiently cleansed. The modern methods of food preparation do away with the necessity for much mastication, and the teeth and gums lacking this functional use require something to take its place in order to maintain a normal condition in the mouth. If the surfaces of the teeth were constantly wiped clean by the friction of food in mastication, and the gums stimulated to normal function by usage there would be less dental caries and fewer diseases of the pericemental membrane and gums. But lacking this there arises the necessity for supplying this friction by the toothbrush. Of the utility of this process there can be no doubt, provided always that the brush is used judiciously, but unfortunately like many another worthy thing it is frequently abused. Much injury is often done the gum tissue by too vigorous cross brushing—the bristles forcing the thin gum away from the teeth and leaving the surface exposed at the junction of the enamel and cementum.

The gums and teeth will stand a great deal of friction and be benefited by it if it is exerted in the right way, and it should be the duty of the dentist to so instruct his patient that the brush may be used judiciously. To merely insist on the patient brushing the teeth thoroughly, and emphasize this fact at every sitting, is to take the chances of doing more harm than good by inducing the patient to cross saw the teeth more and more with the disastrous results already indicated.

Nor will it do to tell the patient to "brush the teeth up and down" as is so often done. This is as likely to work injury as the cross brushing by forcing the gums away from the upper teeth on the upward stroke of the brush and from the lower teeth on the downward stroke. In fact it is quite an art to properly brush the teeth. The brush should be made to rotate against the surfaces of the teeth, coming in contact with the gums and teeth of the upper jaw only on the downward stroke, and vice versa. There should of course be some cross brushing against certain surfaces and positions in the mouth where the rotary method cannot well be employed, but the patient's attention should be especially directed to the danger of injury to the gums by too much cross brushing at the point where the free margin of the gum covers the tooth. This evil is growing rapidly among those who are ultra particular regarding the care of the teeth, and it requires constant observation and supervision on the part of the dentist to check it. The practice of dentistry is one continuous campaign of supervision and education, and apparently when one evil is corrected another one crops up to take its place. Some individuals today are doing more harm than good with the tooth brush, but this is no argument against the judicious use of the brush.

THE EDITOR'S DESK.

WASTE.

I am often appalled when I think of the terrible waste there is going on in the world. If all the material that is destroyed or allowed to spoil were carefully preserved there would be no need of want, but the pitiable part of it is that frequently the people who are most in need are the ones who waste the worst. Possibly if the matter were carefully noted it would be found that the fact of their want could be traced directly to their habit of waste. John D. Rockefeller, if the truth were known, owes his wealth more to the fact that he early learned how to recognize waste and prevent it, than he does to the manipulation of stocks.

A man will take a few puffs from his cigar or a few whiffs from his pipe, and throw the cigar away and light another one, or knock the tobacco out of his pipe and fill it again; and while there are many excellent people who will claim that the use of tobacco at all is worse than waste, yet that is not the point under discussion. The same thing holds true of many of the commodities of life which we are accustomed to call the necessities. Waste is everywhere.

Sugar undissolved is left in the bottom of the coffee cup to be thrown out in the dish water—probably enough to sweeten another cup of coffee—and no one will claim that the sugar is beneficial to the dish water. If all the good food that is daily dumped in the garbage cans of Chicago were saved and utilized as it should be it would make many a family a competence for old age. In every large banquet there is more food wasted than is utilized, and this fact cannot be justified on the ground that all the food is paid for by the banqueters. It is waste—pure and simple waste, of the most wanton kind, and there should be some way to stop it. Of course I am not familiar with what takes place behind the scenes when the remaining food—some of it untouched—is carried back from the table to the kitchen. This is a subject into which I do not care to go too closely, because the mistake is made before this stage of the proceedings is reached. The simple fact is that more food is served at most banquets than any individual can eat with satisfaction or comfort, and it is pure extravagance. Many a man has had to see a physician as a result of overloading his stomach at a banquet, and this is more extravagance. Extravagance is always wastefulness in another form, and people should begin to wake up and realize this.

Men in the business world are doing this very rapidly, and it is the source of many a fortune. In some lines the incomes from the waste of former times is today paying the expenses of the concern. Take the packing house industries of Chicago, for instance. In the early days the waste was appalling, and the problem was to destroy, burn up, and get rid of much of the material which today is turned into revenue. Every bit of this so-called refuse is now put to some useful purpose with the result that the profits of these concerns—but I didn't start to write of the profits of the packers. This is a tender point with most of the consumers, but I for one do not begrudge them that share of the profit which comes from utilizing what was formerly considered as nothing but the waste product. Some wag has said that in the slaughter houses they now make use of everything but the squeal, and that they are at work on a contrivance to bottle that and use it for fog horns on the lake.

What is true of large industries is true in a lesser ratio of the smaller interests of life. It is true of the kitchen, of the wardrobe, of the coal cellar, and of the dental office. Use all you need to make you happy if you can afford it, but avoid waste as you would any other bad habit, because no matter how much money you have you cannot afford to be wasteful.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

At the regular meeting of the Odontological Society, Dr. H. C. Register, of Philadelphia, presented a paper entitled "Pneumatic Influences."

It was mainly a résumé of the results of his own work in the various uses of compressed air, which he seemed to think was a panacea for many more of our dental ills than has usually been supposed.

Especially in Pyorrhea Alveolaris he thought it accomplished a great deal, helping to clean away the debris of instrumentation and aiding in carrying medicaments into the tissues.

In obtunding sensitive cavities, with a warm air blast it had been of much help in his hands. He thought the effects of a gentle current on the gum was akin to massage in results obtained.

The regular meeting of the New York Institute of Dental Technique occurred on November 26th at the Hotel Chelsea. In the afternoon clinics were given by Drs. Thos. E. Weeks, W. B. Dills and Paul R. Stillman, relating to the subject of the evening, and Dr. M. Hart Brown demonstrated "Solid Gold Tips Anchored with Platinum Posts." These clinics were largely attended and much interest was exhibited in the work.

In the evening Dr. Thomas E. Weeks, formerly of Minneapolis, read a paper entitled "Gold Inlays," in which he gave an exhaustive description of various methods, especially the Taggart system. Discussion was opened by Dr. F. T. Van Woert, of Brooklyn, and participated in by a large number. With but one dissenting voice "Gold

Inlays" were spoken of in high terms. Dr. Henry W. Gillette took somewhat the opposite side. He did not think as good margins and as true and satisfactory work had been obtained with gold inlays as was to be found with gold fillings from the hands of capable gold operators. Especially did he think this was true of the margins.

The December meeting of the Institute of Stomatology was the regular annual and business meeting, hence no papers. The society was reported in good financial condition and flourishing membership. Dr. Chas. Otis Kimball was elected President and Dr. George S. Allan Vice President. Dr. Arthur H. Merritt became the new member of the executive committee, while Dr. Henry W. Gillette was elected Treasurer instead of Dr. J. Morgan Howe, who became Curator.

Dr. Calvin S. Case, of Chicago, was the guest of honor at the Lotus Club Monday evening, December 9th. About forty members of the First District, the Second District and the Central Dental Society of New Jersey had been invited to pay tribute to Dr. Case, who came here to read a paper at the annual meeting of the First District Society on Tuesday, the 10th. About six Chicago men also were present.

Evidently, from all the beautiful things said about Dr. Case by his home friends and a number of those in the East who know him quite well, we have missed very much by not being better acquainted with the gentleman.

Dr. W. W. Walker acted as host and toastmaster and of course he "made good" with his pleasing introductions and ready wit. Dr. Harlan, formerly of Chicago, as part of his tribute read a poem.

The men from Chicago were Drs. Brophy, Ames, Smith, Dunn and Good. Besides the Chicago men the following paid tribute to Dr. Case: Drs. J. W. Taylor, S. G. Perry, Ottolengui, Ashe, Sawyer, Hutchinson, Shields, Carr and Van Woert.

Monday and Tuesday afternoon were devoted to clinics and exhibits. Cast gold inlay systems were in greatest evidence, as might be expected. Drs. Good of Chicago and Harlan of New York both demonstrated on pyorrhœal cases, which were highly interesting, and Dr. Wm. Carr of New York showed a true case of syphilis with tongue and buccal manifestations, which was very instructive.

Dr. J. A. Dunn of Chicago showed a new filling material which can be molded in the cavity in a matrix of platinum or even tissue paper to facilitate easy removal and baked over a Bunsen burner.

Considered generally the clinics were even more extensive than heretofore, both table and chair. Among the many eminent practitioners present and giving clinics we may mention Truman W. Brophy of Chicago, Geo. V. I. Brown of Milwaukee, M. I. Schamberg of New York City, Andrew J. McDonagh of Toronto, Canada, Richard Grady of the Naval Academy, Annapolis, and L. M. Cowardin of Richmond, Va.

The clinics on the program numbered seventy-three, and nearly all came. There were several unannounced clinics as well.

The thirty-ninth annual meeting of the First District Dental Society occurred Tuesday evening, December 10th. The Second District Dental Society was invited to meet with the First District on this occasion. The essayist of the evening was Calvin S. Case, D. D. S., M. D., Chicago, Ill. His paper was entitled "The Importance of Moving the Roots of the Teeth in Orthopedic Dentistry." It was a fitting close to the two days' clinics.

Dr. Case's paper portrayed most entirely the great advantages to be gained by the bodily movement of teeth—roots as well as crowns—into positions they should occupy. The device for accomplishing this consists of a broad band attached to the crown of a tooth, to which is soldered an extension bar which projects with the line of the root as far toward its apex as is expedient. To the end of this bar the power is exerted. By this method the apex of the root will move with the crown.

Dr. Case embellished his paper with a number of very fine lantern slides and photographs of patients. He has obtained some very beautiful results and received the commendation of all those who discussed the paper. The discussion was opened by Dr. S. H. Guilford of Philadelphia. Although approving the feasibility of the bodily movement of teeth he did not think it necessary as a general practice, because nature took care of that feature subsequently. Dr. Guilford spoke laudingly of Dr. Farrar's mighty work and of Dr. Kingsley's mightier. Of the former he said that in his books the same principle as elucidated by Dr. Case was treated of. In going over old literature on the subject he has been surprised to find that few new things are really new. Even the bodily movement of roots has been practiced long ago.

Dr. Farrar was next called upon to speak. His repartee to Dr. Guilford was that it is the easiest thing to find fault and difficult to praise, and then proceeded to tell Dr. Case wherein he was in error.

Dr. Jackson believed the movement of roots the correct thing. Dr. Kemple agreed entirely with Dr. Case, and hoped we younger men might show as good a stewardship. Dr. Ottolengui spoke of Dr. Case's presentation of the principle of root movement at Old Point Comfort in 1894. At that time he opposed his ideas, but tonight he was prepared to say that he is correct absolutely. It is one of the most valuable additions that has been given by any man. Dr. Dailey made the query, "Why not take orthodontia cases when they are developing?" Dr. Brophy of Chicago in a few well chosen remarks said that Dr. Case simply changed the face divine. Dr. Ames remarked that Dr. Case did not need support after his beautiful illustrations. Dr. Case, in closing the discussion, said it was important to move the teeth in phalanx. It would certainly be better to take care of cases early, but how many cases do we get young enough?

Speaking to the skeptics he said: "Here you have an appliance that moves the whole body of the tooth. If you will stop standing aloof and criticising and take hold and investigate you will find out for yourselves."

Before Dr. Case could take his seat Dr. Walker claimed the attention of the society by advancing to the platform with a package, and in a few eulogistic remarks requested Dr. Case to accept from the First District Society their certificate of honorary membership. Love and good fellowship go with it. Before Dr. Case had time to express himself Dr. Ottolengui had taken Dr. Walker's place on the platform with another framed document, which he explained was a mark of appreciation tendered by the members of the Odontological Society of New York.

Dr. Case accepted his honors very gracefully. Never in all his life, said he, had he been placed in this embarrassing position. Amid great applause the meeting was adjourned to repair to the banquet hall, where a feast of the palate awaited the crowd which had waited through a long evening for the aftermath of our largest meeting of the year—a collation.

THE BOROUGHS.

FOR THE DENTAL REVIEW.

In the DENTAL REVIEW for December, 1907, the editor, officially discussing "Thraldom of Trade Journalism," says:

"Since January, 1902, seventy-two numbers of the journal have been issued under his editorial management, which makes approximately seven thousand pages of printed matter. In all that mass of material not one line has been printed at the suggestion of the publishers. * * * They have never tried in the slightest degree to dictate the policy of the journal."

I trust the editor and publishers will not deem what I have to say on this subject supererogation, but will note the spirit of grateful appreciation actuating me.

In a modest way I have contributed to the seven thousand pages spoken of; and all the time I have been impressed by the courtesy of the editor, and fair dealing of the publishers; that there did exist the fact stated by the editor, that trade commercialism did not bind or bribe the trend of the journal.

I am glad to have the positive statement of the editor to this effect and I thank the publishers for such treatment of their editor from date of their agreement to the present.

Dr. Johnson says: "Much is written every year about the so called thraldom of trade journalism." I add that much more is said than written, by far too much of both.

Let me give a little personal experience. I once prepared an article for publication on an important topic, and sent it to the editor of a prominent journal. In due time it was returned "with thanks." It was (and still is) the only instance of non-acceptance of my proffered manuscripts. I naturally sought the reason, re-read the manuscript and discovered an illy conned paragraph that changed my scientific (?) effort into a rather neatly turned many paged advertisement. I took it to another editor, a close friend, who read it and said: "Dr. —— did just right." I turned to said paragraph, "scissored it," whereupon my consulting editorial friend exclaimed: "Now I want it, and will pay you well for it."

Suppose I had cherished vengefulness against the journal first applied to. Suppose I had indulged in a tirade against "journalistic tyranny" of supply house publishers, in local society, state meetings and national convention. In the light of what Dr. Johnson has said, how would I appear? Very much as a slanderer.

I do not know how it is with other supply house journals, but from every "kicker" that I have investigated I have learned that their articles had been returned with "thanks" or that the animus of criticism could be traced to a misappreciation of the aid, the immense service, rendered to the dental profession by the supply houses and their journals. Readers of the DENTAL REVIEW, let me ask you where would the dental profession stand, what the plane of its status, bereft of the brains, dollars and ventures of supply houses of England and America? It seems to me that a moment's reflection only is needed to show that as a body we are debtor to an immense preponderance of benefits received.

Have we said, "thank you"? Have we not rather imitated a society belle, who while enjoying the hospitality of the giver of a function, hissed in sub-vocal sibilation, "Barri-o-s!" "Pa-s-te!" as she tossed her head toward her hostess wearing a sunburst of blue white gems nested in "Billowy curves and Rose-Point"?

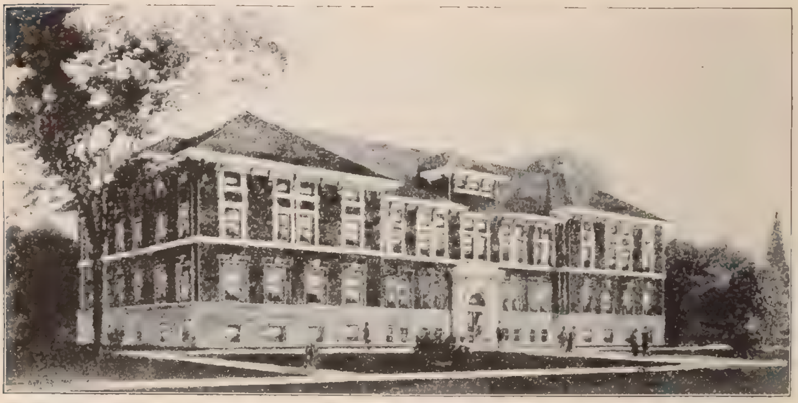
For one my duty is clear (my pleasure paralleling it) to again thank editor and publishers, renew my subscription; try and induce others to subscribe; ask gratuitous publication only of articles educational or scientific.

If I wish to advertise, write *"copy"* and send pay (appreciative of so good a medium), keeping in mind the profound philosophy spoken by the man of Gallilee when he said: *"Render unto Caesar the things that are Caesar's."* and again, *"Now abideth faith, hope, charity,* the greatest of these is charity."

A. C. HEWETT.

The Dental Colleges of America

In the series of college illustrations beginning in this issue, we propose presenting a cut of each dental college building in America, with the year of its organization and the total number of its graduates to date. We believe this series will prove of the greatest interest not only to college men and students, but to the profession at large. It will be something of a revelation to see the character of these buildings, and when we remember that there are nearly sixty of them scattered throughout the land the magnitude of dental educational interests in this country is apparent. It will be impossible to establish any particular rule as to the order of their publication on account of the varying sizes and forms of the cuts, but as nearly as possible we will present them in the order of their organization. They will continue throughout the year, and will form a permanent record well worthy of preservation for future references.

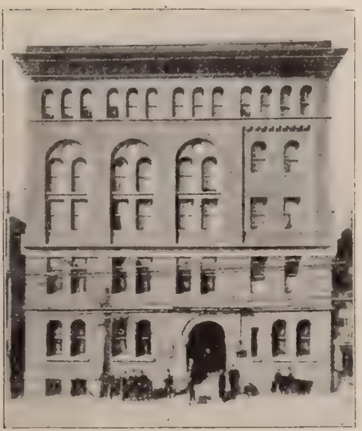


College of Dentistry—University of Michigan
Ann Arbor, Mich.

First Class Graduated 1876
Total Number of Graduates to January, 1908—1,275

The Dental Colleges of America

Dental Department—University of Maryland
Baltimore, Md.
First Class Graduated 1883
Total Number of Graduates to Jan., 1908—1257



Dental Department—Baltimore Medical College
Baltimore, Md.
First Class Graduated 1896
Total Number of Graduates to Jan., 1908—230

Baltimore College of Dental Surgery
Baltimore, Md.
First Class Graduated 1841
Total Number of Graduates to Jan., 1908—2,524
Oldest Dental College in the World

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Sensitive Dentine:—If the dentine is hypersensitive have a sharp bur run at a high speed without exerting any pressure on the handpiece. We can minimize the patient's suffering by: First, sympathetic co-operation; second, extreme delicacy and expediency; third, a sharp bur and thorough knowledge of individual temperament.—*Bernard Bramm, Chicago.*

Pulp Anesthesia:—For pulp anesthesia use a solution of cocaine in glycerine mixed to a thick plastic consistency. If a drop or two of adrenalin chloride is added the operation will be bloodless. Glycerine is a strong solvent for cocaine and its strong affinity for water makes it readily absorbed by the pulp tissue. If the pulp is highly congested relieve it first by the use of a refrigerant, as chloroform or ethel chloride.—*T. A. Leach, Emporia, Kansas.*

Administering Gas:—It is not necessary to diet before the administration of gas. The position of the patient is of the greatest importance, and in operating the head should be well erect, so that tooth substance or blood clots do not get into the throat, and thereby cause strangulation. In regard to requesting patients to loosen their clothes, I find it is not necessary unless the patient feels uncomfortable, in which case the collar may be loosened.—*A. Brown Allen, Chicago.*

Injudicious Extraction:—A great many times an upper molar whose lingual root has become exposed its whole length by absorption of the process and gum, is extracted. In these cases I have amputated the lingual root close to the bifurcation and filled the pulp canal, so saving the tooth that would otherwise have been extracted and thereby giving the patient a molar that will be useful for years to come. To extract such a tooth often deprives the patient of a very useful organ and one that they cannot afford to lose.—*M. W. Olson, Galesburg, Ill.*

Proximal Fillings in Anterior Teeth:—In scientific cavity preparation we have used in proximal cavities in centrals, for instance, a little pit cut toward the incisal edge. If you put a little cement in there, and then use a small pellet of gold and work it down, you are sure you have perfect adaptation, and I do not know how you can be sure of that without it. I know good gold fillings have been made and will be made without this cement, but they will be made oftener and better with it. This cement will not make it easy for us to practice dentistry, but it will aid us.—*J. M. Barcus, Carlinville, Ill.*

Cement to Aid in Retention of Metal Fillings:—No wise operator will throw away any advantages that may be at his command, to make his work stand. Every practitioner has had case after case where he would almost give his soul for the chance of driving in just one or two more nails to make him feel just a little more secure and comfortable about the "retention of that filling." Now, a cement layer is just that longed-for "additional nail or two." That this adhesion of filling to cavity wall is a substantial reality, and not a mere dream has been fully demonstrated time and again by experience.—*C. B. Rohland, Alton, Ill.*

Cement as a Sealing Material:—I do not see how any man, who has ever removed a crown or a bridge, and cut the cement out from under it, and has had the delightful sensation to his olfactory nerves, can believe that cement hermetically seals anything, for we will find that this cement is permeated by organic matter. You cannot take cement and follow the setting of it under the microscope without seeing it change and wobble around in different ways, not for fifteen minutes, but for a day or forty-eight hours—I do not know how long. Everything I have done with cement has made me feel unsafe with it.—*Fred B. Noyes, Chicago.*

Skill in Manipulating Dental Materials:—We never see high grade dentistry coming from a man who uses amalgam, and thinks it as good as gold. That man will always do sloppy gold work and sloppier amalgam work. A man who tries to make himself and his patient believe that a vulcanite plate is just as good as a continuous gum plate will never do very good vulcanite work. The reverse of that is not always true, as the man who can always do good gold work will always or nearly always do good amalgam work. The man who can do good gold plate work if he gets down to it can do good vulcanite work.—*W. H. Taggart, Chicago.*

Cement Lining for Gold Fillings:—Prepare the cavity, and either make a groove or two square corners in the seat of the cavity in which to start the filling, mix some cement the same as for amalgam, and line that portion of the cavity you wish to fill first. Then use large pellets of gold and hold in place with a small plugger point, while you are condensing with a larger one. After inserting several large pellets and thoroughly condensing, see that the enamel margins are free from cement and continue the filling. When you are ready to fill another portion of the cavity, make another mix of cement and proceed as before.—*C. C. Corbett, Edwardsville, Ill.*

Fees:—The subject of fees is one that is always of interest to us. Do we receive sufficient remuneration for the services we give and the benefits derived? Is it not a fact that the extraction of some teeth is more difficult, requires more skill and subject to much more danger than a great many cases of surgery, where trained nurses, sterilized outfits and wise acting surgeons are to be paid for without a murmur? Their operations are always a success if the patient survives the ordeal. We cannot bury our mistakes, but must face them, neither can we take an appeal to a higher court and have the verdict reversed in our favor.—*L. H. Moore, Appleton, Wis.*

Capping Pulps:—Twenty-five years ago probably no subject received so much attention as conservative treatment of the pulp. To find merely an exposure of the pulp, was of no particular significance for we capped it. If the pulp was partly devitalized we performed an "operation" called pulp amputation, capped the remainder and filled the tooth. In the meanwhile we relegated the arsenic bottle to some obscure place in the laboratory. It did not take us long to discover that these pulps did not always live; that in adult life the pulp rarely lived under a capping. But in the teeth of the young the operation is often successful. All this taught us to treat the exposed pulp problem in a rational way. The arsenic bottle is restored to its place in the medicine closet, where it shares company with the cocaine used for pressure anesthesia.—*E. H. Allen, Freeport, Ill.*

Wire Connection for Lower Partial Dentures:—A plate of this kind is very much easier to make, less in the way of the tongue, stronger and the life of the remaining teeth will be very much extended by virtue of its use. There can be no criticism made upon the ground of the lack of strength of this wire. The reason is that the wire is drawn through the plate and is of uniform strength throughout its length, whereas in a plate as commonly constructed the swedging or vulcanizing leaves some one point that is weaker than others. At the present time we are using 13 gauge wire for this purpose and in placing it my experience has been that it is better not to fit it too closely to the tissues. Fit it loosely so that it does not press into the tissues. You may lay it well down in the floor of the mouth, and it will be a great pleasure to those who have not had experience with this form of partial denture to see the results you will get.—*F. E. Roach, Chicago.*

Dental Floss for the Patients' Use:—There has been a new article recently introduced, or rather an old article in a new form, a toilet dental floss for the patient. It is a flat thread, waxed and impregnated with an efficient antiseptic and essential oils, and put up in a small glass container with cutting device, and the silk is drawn out through a rubber eyelet.

The value of dental floss silk used systematically by the patient for removing particles of food and cleaning the spaces between the teeth, has long been known, but it may safely be said that its importance is not as fully appreciated as it should be, and that sufficient attention is not given by the majority of dentists to instructing the patient on this point.

One of the greatest strides toward the preservation of the teeth of the public, would be brought about by the general use of dental floss, and the durability of fillings after a mouth has been put in as perfect condition as possible, would be greatly increased.

It is, of course, taken for granted, that the proper use of the brush is necessary for common cleanliness, but floss silk penetrates where the brush cannot.—*B. G. S.*

MEMORANDA.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, December 10-13, 1907. For papers or further information applicants must address Dr. N. C. Schaeffer, Secretary, Harrisburg, Pa.

ANNUAL CLINIC—NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

The annual clinic of Northwestern University Dental School will be held at the Northwestern University Dental School, corner Lake and Dearborn streets, Chicago, on Tuesday, January 14, 1908.

A hearty invitation is extended to all graduates and ethical practitioners.

TO THE ALUMNI OF THE NEW YORK COLLEGE OF DENTISTRY.

Any alumnus seeing this notice is kindly requested to send his name, address, and year of graduation, to the undersigned.

MAURICE GREEN, D. D. S.,
1190 Lexington Ave., New York City.
(Acting for the Alumni Association of the N. Y. C. D.)

ALUMNI ASSOCIATION.

The second annual clinic and exhibit of the Alumni Association, Dental Department, Milwaukee Medical College, Marquette University, will be held in Milwaukee, Wis., January 21 and 22, 1908.

Preparations are being made for an excellent program.

Members of the dental profession are cordially invited.

EDWARD C. WACKLER, Secretary.

ALUMNI ASSOCIATION, CHICAGO COLLEGE OF DENTAL SURGERY.

The annual meeting of the Alumni Association of the Chicago College of Dental Surgery will be held in the College Building on Wednesday, January 15, 1908. Dr. C. M. Wright, of Cincinnati, Ohio, will read a paper and there is a long list of clinics. It is hoped that there will be a large attendance, especially of graduates of the College.

DR. T. L. GRISAMORE, President.
DR. H. C. PEISCH, Secretary.

AMERICAN DENTAL DEGREE O. K.—GERMAN COURTS DECIDE TITLE CONFERRED ON THIS SIDE LEGAL.

Special Cable to the Daily News.

Frankfort-on-Main, Dec. 6.—After a ten years' fight on degrees conferred by American dental schools, the organized dentists of Germany have met their Waterloo, the imperial courts having decided that the American college title of "doctor of dental surgery" is legal in the fatherland when conferred by a reputable American institution.

AMERICAN DENTAL SOCIETY OF EUROPE.

The thirty-fifth annual meeting of the American Dental Society of Europe will be held in London, England, beginning July 31, 1908.

Notice is given thus early that American practitioners may include this meeting in their European itinerary.

Any information will be gladly given by writing the undersigned.

J. W. Gale, Honorable Secretary.
79 Hohenzollern-Ring, Cologne, Germany.

DR. W. T. MAGILL.

On Saturday, November 23, 1907, Dr. W. T. Magill, of Rock Island, Ill., rounded out fifty years of practice in that city. The dentists of Rock Island and surrounding territory celebrated the event by calling on the doctor and offering their congratulations and giving other tokens of their esteem. Letters were also read from prominent dentists all over the State, and the good doctor was made to realize the high esteem in which he is held by his professional friends. The Dental Review joins heartily in greetings and congratulations.

CLINIC OF THE G. V. BLACK DENTAL CLUB OF ST. PAUL, MINN.

Everything is being done to make the annual midwinter meeting of this club, which will be held on February 27 and 28, 1908, as interesting as possible. Many of the members of this club will make gold foil fillings, while other members will make demonstrations with gold, showing various methods of casting tips and backings for teeth as well as inlays. Dr. W. N. Murray will upon both days demonstrate the use of Dr. Taggart's casting machine; Dr. J. O. Wells will demonstrate methods for casting Richmond crowns; Dr. C. E. Woodbury, of Council Bluffs, Iowa, an authority on inlays, will also demonstrate and read an essay on the value of using inlays. Such well known operators as Drs. Searl, F. S. James, Wallace, Fawcett, Yerke, Gallagher, Conzett, Carlson, Moyer, W. D. James, Crandall, C. H. Robinson, Lewis, F. S. Robinson and others will make operations. The essays, as in the past, will be one of the features of the meeting. The program will be printed in the February number of this journal. Everybody interested in the advance and progress of the dental profession is invited to meet with us and assist in making our coming clinic the best ever held. For further information apply to R. B. Wilson, Secretary, American National Bank Building, St. Paul, Minn.

APOLOGY AND EXPLANATION.

A serious injustice was done in the report of the clinic committee of the Illinois State Dental Society to three of the gentlemen who were reported as delinquent.

Dr. Harvey E. Harrison, clinic No. 3, was present and made his clinic; Dr. J. A. Bullard, No. 22, notified the supervisor that he would be unable to be present; and Dr. Lee K. Stewart, No. 47, sent a telegram explaining his absence.

The editor followed the notes received from the supervisor, which in these three instances were imperfect. When ready to send to the publisher the editor called up the office of the supervisor of clinics for the purpose of verifying the delinquent list, but found he was away on vacation somewhere in the wilds of northern Michigan out of reach. The editor feels very sorry for the injustice done and asks forgiveness of the gentlemen unjustly censured.

It is the editor for the State Society, and not the editor of The Dental Review, who is responsible in this instance.

These three names will not appear as delinquents, in the bound volume of the Transactions.

Edmund Noyes,
Editor for Illinois State Dental Society.

THE ST. LOUIS SOCIETY OF DENTAL SCIENCE ANNUAL MEETING.

The St. Louis Society of Dental Science will hold its annual meeting at the Jefferson Hotel, 2:30 p. m., January 21, 1908. Lecture on "The Life Work of Professor Miller," by Edward C. Kirk, D. D. S., Sc. D., Philadelphia. Discussion opened by Dr. N. S. Hoff, Ann Arbor, Mich., and Dr. Louis P. Bethel, Columbus, Ohio. The annual banquet will be given at 7 p. m. of the same day in honor of Prof. Edward C. Kirk, dean of the Dental Department, University of Pennsylvania, and editor of *The Dental Cosmos*. The speakers will be Rev. Dr. Henry Stiles Bradley, pastor St. Johns M. E. church, St. Louis; Hon. Arthur W. Sager, Circuit Attorney, St. Louis; Dr. Louis P. Bethel, editor *The Dental Summary*, Columbus, Ohio; Dr. Neville S. Hoff, editor *The Dental Register*, Ann Arbor, Mich.; Dr. Chas. H. Darby, St. Joseph, Mo.; Dr. F. G. Worthley, associate editor *The Western Dental Journal*, Kansas City; Dr. W. L. Whipple, St. Louis, Mo.; Dr. Burton Lee Thorpe, associate editor *The Dental Brief*, St. Louis.

The profession are invited to attend both the lecture and banquet. For reservation and other information address Dr. Richard Summa, Oriel Building, St. Louis, Mo.

W. L. Whipple,
E. E. Haverstick,
Herman F. Cassell,
Executive Committee.
D. O. M. LeCron,
President.
C. O. Simpson,
Secretary.

PATENTS OF INTEREST TO DENTISTS RECENTLY GRANTED.

868,964. Crown-pin, for dental work, Henry D. Bultman, New York.

869,175. Tooth-pick, Peter Gorut, Fulton Chain, N. Y.

869,191. Dental plate, Gordon W. Morgan, Salem, Va.

869,035. Dental instrument, Wm. C. Wolford, Confluence, Pa.

869,417. Stone guard for dental grinding tools, Frank W. Chandler, Valley City, N. D.

869,840. Dental engine, Winfield E. Hanson, Biddeford, Maine.

869,563. Handpiece for dental engines, James F. Hardy, New York, N. Y.

869,562. Dental engine, James F. Hardy, New York, N. Y.

869,573. Toothpick machine, Wm. F. Hutchinson, Nyack, N. Y.

869,520. Dental impression pliers, Myron A. Robbins, Passaic, N. J.

869,993. Machine for boxing toothpicks, Simon S. Tainter, W. W. Tainter and G. P. Stanley, Dixfield, Maine.

870,824. Handpiece for dental engines, James F. Hardy, New York, N. Y.

870,825. Angle attachment for dental handpieces, James F. Hardy, New York.

870,962. Manufacture of a new material for use in dentistry, Otto Hoffmann, Charlottenburg, Germany.

870,573. Instrument for introducing liquid medicament into teeth, Charles G. Myers, Cleveland, Ohio.

870,909. Dental articulator, George B. Snow, Buffalo, N. Y.

871,400. Combination dental bracket, George Hall, Lima, Ohio.

871,430. Artificial tooth, Joseph Morris, North Wales, Pa.

Copies of the above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

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AMALGAM INLAYS.

BY H. W. C. BODECKER, B.S., D.D.S., M.D., ZAHNARTZT, BERLIN, GERMANY.

The revival of the use of amalgam and the widespread use of the inlay in filling teeth has induced me to say a few words in behalf of the amalgam inlay. At first sight it might appear that amalgam was not a sufficiently noble, or even a suitable, material, for the production of inlays. But is not an inlay made of a perfect amalgam just as serviceable as one made of gold or of porcelain?

For some time I have used amalgam inlays, principally in proximo-occlusal cavities of the molars. My experience has led me to prefer amalgam to porcelain in such places, because the margins of an amalgam inlay stand the stress of mastication better. From an esthetic point of view, however, no other material can compare with porcelain and it is therefore indispensable in certain cases.

Compared with a gold inlay, one made of amalgam has no special disadvantages, though it is of course made of a baser material, and lacks the pleasing color of gold. On the other hand an amalgam inlay is much more easily and quickly made, polished and undercut than one made of any other substance.

Compared with the ordinary amalgam filling the inlay has the advantage in every respect. It is denser and more uniform in density than an amalgam filling made in the mouth ever could be. As the cavity is more accessible on the model so a greater and more equally distributed pressure can be brought to bear on the whole mass of amalgam, giving greater hardness and at the same time rendering it less liable to distortion. In making the filling on a model we not only allow crystallization to take place undisturbed, but we also avoid the danger of having our material bitten out of shape, or having it forced up into the interproximal space.

As to grinding and polishing,—how much easier it is to do that on a model than in an interproximal space where the thin amalgam has been forced out between the matrix and the neck of the tooth. Though finishing is not always difficult, the patient is willing nevertheless to be spared the discomfort of such a proceeding in the mouth.

It takes no longer to make an amalgam inlay than to make a large amalgam filling. Granting that the time taken in preparing a cavity for an amalgam filling and for an inlay is about the same, it then takes less time to take an impression of the cavity than to fill it with amalgam. And at a subsequent sitting, it also takes no longer to set the inlay than to finish and polish the filling.

The cavity for an amalgam inlay is prepared in the same manner as for a gold inlay. Thin walls of enamel should be removed. The margins should be smooth and if possible at right angles to the surface. Most cavities can be fully prepared for taking the impression by the use of stones. They cut rapidly, leave a smooth surface, and when used with water are more agreeable to the patient than burs. Only two shapes are needed, slightly conical barrel-shaped stones of different diameters, and very small round stones, such as the gem cavity points. By using a rightangle hand-piece, the stones can be worked in exactly the same direction in which the impression is to be withdrawn from the cavity. In most cases it is possible to shape proximo-occlusal cavities so that the inlay will be self-retentive. This can be done by running a fissure bur at an angle of thirty degrees across the buccal and lingual margins of the cavity on the occlusal surface. Excavation is continued until a margin of healthy dentine and enamel surrounds the cavity. Should there still be carious areas in the dentine, not near the margin, it is better to remove them after the impression has been taken. Sometimes it happens that the margins are satisfactory but that there are places in the lateral walls of the cavity, which act as undercuts, preventing the withdrawal of the impression. In such cases the cavity must be partially filled with "Fletcher" and then ground out with suitable stones.

For impression material I use cones of various sizes made of Detroit perfection impression material. In an alcohol flame the point is softened and the cone pressed into the cavity. To confine the material when necessary, a thin copper band is placed around the tooth, or a thin piece of sheet steel which reaches well up to the gingival margin of the cavity is held against the adjacent tooth. The impression is then poured with ordinary plaster to which a little salt or potassium nitrate has been added. When dry, this makes a model with margins sufficiently hard to resist the pressure during the introduction of the amalgam. The objections to the hard varieties of plaster are, the difficulty of trimming and the danger of chipping the margins while cutting away the model to obtain perfect access to the cavity. After having been removed from the impression the model is allowed to dry. All excess plaster is then cut away so that the margins of the cavity and the immediately adjacent surfaces of the tooth stand out clearly. The model is now ready to be filled.

Any amalgam that gives satisfaction as a filling material can be used in making the inlay. The ideal amalgam for this work is one that does not in time distort, that keeps its color in the mouth, that is sufficiently hard to withstand the wear of mastication and that at the same time is not brittle. A slow-setting amalgam is also to be preferred, especially in contour work or when a number of models are to be filled at one time.

The cavity of the model should be filled with as much care as if the operation were performed in the mouth. The excess mercury is removed by exerting as much pressure as possible with the broad surface of the thumb upon the whole mass of amalgam. With a small thin spatula the inlay is then contoured and trimmed flush with the margin of the cavity. If necessary, cusps and fissures are carved. It is then allowed to set. Flling the model a day before setting the inlay gives the amalgam ample time to harden.

The filling cannot be removed without partially destroying the model, but by forcing a hatchet excavator into the plaster near the margin of the cavity and prying, the filling is easily raised. Upon examining the inlay at this stage, we find that in places the amalgam laps over the margin of the cavity. But as the margins are very sharply defined on the surface of the inlay, it is an easy matter to remove the excess with a cuttle fish disk. The inlay is then tried in the mouth, and if the model has been perfect, it will go into place easier than most inlays made of other material. Undercutting is rapidly done with a small circular saw on the engine. If deemed advisable, undercuts may also be made in the tooth. If the cavity is perfectly dry, and a thinly-mixed, rapidly-setting cement (preferably hydraulic) is used, the undercuts in the tooth need not be deep. When the cement has set, the operation is complete, as it is but very rarely necessary to grind away any part of the inlay in the mouth.

There are places in the mouth where I believe the amalgam inlay to have advantages in certain circumstances over other filling materials. Of this class is erosion of the necks of the teeth, from the second bicuspid backward. I say from the second bicuspid because of the just prejudice to the sight of amalgam in the anterior part of the mouth. We may fill such cavities with gold or amalgam, in which case the patient must suffer the inconvenience of the rubber dam, the clamp and the malleting, beside the pain, if the neck of the tooth happens to be sensitive, of the subsequent grinding and polishing. This is obviated by all inlays, but perfect gold and porcelain inlays are difficult to make for these shallow cavities. On the other hand, this is the simplest possible cavity for an amalgam inlay.

The impression is made with a rod or cone of impression material a little larger than the cavity. The point only is softened and pressed into place. The harder part of the compound presses away the gum so that a sharp margin is obtained about the whole cavity. If an impression must be taken of the distal surface of the last molar, the cone of compound is attached to a strong curved spatula and the material pressed into the cavity by this means. In cases of erosion of the necks of the teeth where the margins are perfectly sharp, no excavation need be made before taking the impression. This is, of course, most agreeable to the patient. Silver nitrate applied to those parts of the cavity where the undercuts are to be placed will make excavation at the next sitting less painful. In this way, the operator can make a perfect filling with the least pain to the patient and the least trouble to himself.

In cases where there has been great loss of tooth substance reaching far under the gum, with or without destruction of the pulp, the amalgam inlay offers one of the best means of restoring the tooth to its original form. The only other filling really suitable for these cases is the gold inlay. But not every patient can afford extensive restorations on his molar teeth with so costly a material, and I firmly believe, leaving the esthetic qualities out of the question, that an inlay made of good amalgam is as serviceable as one made of gold.

It is in just such cases that inlays, obviating the painful process of finishing and polishing near the gum, are so acceptable to the patient. But why should a patient unable to afford gold or porcelain not also be given the advantages of the inlay method when this can be done with so little trouble to the operator? For some time I have tried to avoid the use of porcelain inlays when the margin of the cavity crosses the occlusal surface, and use instead inlays of gold, or if circumstances require of amalgam. Should the whole occlusal surfaces need restoration, then porcelain of sufficient thickness is a reliable material.

When the pulp is still intact, and the buccal and lingual walls of the cavity have been broken away, it is often difficult to obtain good retention for an inlay. If we use gold, deepening the fissure and allowing the inlay to partially cover the occlusal surface gives ample retention. Amalgam on the other hand, not having the tensile strength of gold, is very liable, unless reinforced, to rupture when extended as a thin process along the slightly deepened fissure. To reinforce the amalgam at this point, it is necessary to deepen the fissure more than for gold and to drill a pit at the end away from the cavity. Before filling the model of such a cavity, a tinned steel wire, sharply bent so as to fit well into the pit, should be laid along the bottom of the fissure and allowed to extend into the cavity toward the gingival margin. In the finished inlay the wire should be well within the mass of amalgam in the cavity. The tinned surface of the wire must be absolutely clean. The mercury amalgamates the tin uniting the wire firmly with the inlay while it does not attack the wire itself. By the aid of such reinforcements the question of retention can be solved in every case.

Operators are often confronted with molars badly broken down on the occlusal surface and decayed to the gum mesially, or distally, or both. The question then arises, to fill or to crown? In the great majority of cases the latter is resorted to. If a filling is decided upon only a gold or a porcelain inlay are considered. But to make a perfectly fitting, well contoured inlay of such size with either of these materials is no easy matter. An amalgam inlay, however, made by the following method, presents no difficulties: The tooth is prepared and an impression is taken. The interproximal spaces are then filled out with pieces of wax, their free surface being slightly oiled. A piece of softened modeling compound, about the size of a hazlenut is then placed upon the exposed part of the tooth to be restored, and the patient asked to firmly close the teeth. Slight pressure buccally is applied with the finger while the patient is requested to press against the lingual side of the mass with his tongue. The impression of the cavity is then poured and the model trimmed, leaving sufficient plaster behind and in front of the tooth to serve as support for the bite model. The bite impression is carefully placed so that the impression of the bite fits snugly into the cavity on the model. The upper surface is then poured, the plaster being allowed to extend upon the supports of the lower model. If our operations have been performed nicely, we have an exact reproduction of the relations of the tooth to be filled to its antagonist, as well as to its neighbors. It is surely no difficult task to build up the inlay with amalgam on such a model. After the cavity has been filled, contoured, the fissures and cusps carved and smoothed as much as possible with a burnisher, all accessible surfaces are gently brushed with a camel's hair brush until an absolutely smooth surface is obtained. The harder the amalgam has become the more difficult will it be to obtain this finish. It sometimes appears slowly, but is essential for the perfectly polished occlusal surface of an amalgam inlay. When the amalgam has set, the cusps and fissures are polished on a soft brush-wheel with chalk before removing the inlay from the model. After that the procedure is the same as for other amalgam inlays.

Other places in the mouth could be described where the amalgam inlay would be applicable under certain conditions. But its use there must be left to the judgment of the operator in each individual case.

Assuming that a perfect amalgam is used, the advantages and disadvantages of the amalgam inlay in comparison with other inlays and filling material are briefly the following: It has all the advantages claimed for inlays in general, is less costly in material and appliances for its production than either the gold or the porcelain inlay, is easier to grind, polish and undercut than gold, and has not the extremely friable edges of porcelain. The only filling material with which we can justly compare the amalgam inlay, is amalgam filled directly into the cavity of the tooth. Except perhaps in cases of small simple cavities in the occlusal surface, the advantage is all on the side of the inlay. It is a denser filling, is less liable to distortion, is perfectly finished at the gingival margin, is always perfect in contour, and never can discolor the tooth. Its only disadvantage, when compared with gold or porcelain is its color.

In giving this description of the amalgam inlay, I do not wish it to be understood that I prefer this form of inlay to all others. The gold inlay will always be inserted where the patient can afford it, and the porcelain inlay where it is indispensable on account of its esthetic qualities. Never can an amalgam inlay displace these under such conditions. But I firmly believe that in many cases where today operators, through force of circumstances, are obliged to insert large amalgam fillings, the amalgam inlay would repay the patient and the operator the slightly greater expense and trouble of its use.

Not alone in private practice, but also in the college infirmary can the amalgam inlay be used to advantage. In such places the percentage of inlays in much lower than in private practice, but by making use of the amalgam inlay the student can be given unlimited practice without expense to the patient, in preparing cavities and in taking impressions for inlays.

SPECIFIC CAUSES OF OXY-PHOSPHATE CEMENT DISINTEGRATION IN THE ORAL CAVITY.

BY J. O. KELLER, D. D. S., CHICAGO, ILL.

A reasoning understanding of the physics and chemistry of the powders and liquids and resultant cements is necessary to a solution of this problem.

Zinc oxide (molecules, one atom of zinc and one atom of oxygen,) is the main, and most generally the entire, constituent of dental cement powders. By calcination to about 2,000 degrees, these molecules are concentrated into compound molecular, small, soft, flour-like, flaky particles. These soft flaky particles, when fused together at high heat, about 2,800 degrees, become hard, vitrified, grit, glass-like masses.

Laboratory experiments show that low fusion powder particles of zinc oxide, either in powder or cement mass, are readily acted upon by such acid and acrid fluids as are found in the salivary secretions, and that in proportion as hardness, concentration and vitrifaction by high heat is gained, they resist the action of such acids and acrid agencies; also that the soda of the soda phosphate combines readily with them.

PHYSICAL AND CHEMICAL TECHNIC.

The forces which hold together the structure of cement masses are physical and chemical, one physical and two independent chemical forces.

The cement mass is made up of the following units, not including its elementary composition, as follows:

First, zinc oxide molecules as bought in a crude shape in the drug shops, and afterward cancined into low fusion or high fusion zinc oxide masses. The low fusion will be in flour-like, flaky condition, and the high fusion in flour grit-like particles, or coarser, according as pulverized. Second, phosphoric acid. Third, water holding phosphoric acid in solution. Fourth, aluminum phosphate, soda phosphate, zinc phosphate, or other phosphates, either alone or combined severally as may be required. At least one phosphate must be used. Several may be used.

These bonds of union and forces in the cement mass are as follows:

First—The atoms in the zinc oxide molecules, one each of zinc and oxygen, are held together by the force of chemical adhesion.

Second—The force which holds together the molecules of zinc oxide in the calcined particles is called the force of physical cohesion. This force holds together units of the same character.

Third—The chemical units in phosphoric acid and its water diluent and its phosphates are entirely chemical, hence the force which holds them together may be called chemical adhesion, chemism or chemical affinity.

Fourth—Water is a chemical, each molecule containing two atoms of hydrogen and one of oxygen. It is a high phosphoric and phosphate solvent, and the agency of crystallization in dental cement masses.

Phosphoric acid and water are the basic constituents of all oxyphosphate cement liquids—Soda, aluminum, lime, magnesia, and other ingredients may be incorporated by chemical reaction, and become phosphates accordingly. Soda is most always used to neutralize and regulate the setting, without which or other neutralizer, the powder and liquid, when mixed together, would set violently and with high heat. An aqueous solution of glacial phosphoric acid (rightly named glacial soda phosphate) is the usual and easiest way to make a cement liquid. It will contain from 50 to 70 per cent of impurities in the form of soda phosphate, from 5 to 20 per cent of free phosphoric acid, balance water, free and combined. In chemical union with calcined zinc oxide cement powder, the resultant cement would be a double phosphate of soda and zinc.

SOLVENT CONDITIONS OF THE INTEGERS OR UNITS OF STRENGTH IN OXY-PHOSPHATE CEMENT MASSES.

Zinc oxide is practically insoluble in water, requiring 700 parts to hold it in solution. Various acids in water solution will attack zinc oxide readily and chemically combine with it.

Magnesia is very insoluble in water, requiring 10,000 parts to hold it in solution. Soda is very soluble in water, requiring but one part by weight to hold it in solution. Soda phosphate is so very soluble in water that one pound of it will be held in solution with eight ounces of water. Phosphoric acid is so very deliquescent that seven pounds of it will be dissolved in one pound or one pint of water. The metal aluminum is absolutely insoluble in water. Its oxide will not dissolve in 5,000 parts of water. Aluminum phosphate will not completely dissolve in 100 parts of water, the exact percentage not having been determined.

These solvent conditions should be kept in mind, because the degree of solubility in water, in a measure, determines the degree of solubility or attack by the acid or alkaline reagents in the mouth. Water is the means of conveying the diluent acid and alkaline substances not only into contact, but also into the porous cement structure.

Zinc oxide, soda, phosphoric acid and water, are the main constituents of dental cements; hence cement masses consist of molecules or particles of zinc oxide held together in chemical union by a phosphatic liquid, formulated as aforementioned.

An oxy-phosphate cement mass holding crowns and bridges used as filling therefore are double, triple or quadruple phosphates or higher in series according to the number of phosphates incorporated. With aluminum as a phosphate in the liquids, and a zinc powder, the result would be a double phosphate of zinc and aluminum in a cement mass. A combination of magnesia, soda and aluminum phosphates in the liquid and zinc oxide powder would make a quadruple phosphate, magnesia, soda, aluminum and zinc in the cement mass.

CRYSTALLIZATION.

Cement masses, made with low fusion powders, begin to crystallize as soon as the powder and liquid are mixed. It will expand during the first twenty-four hours, contract the next twenty-four hours and during the next twenty-four or forty-eight nours will expand more than the contraction and expansion of the preceding forty-eight hours. These movements result from a crystallizing process. It may continue for several months, after the cement has apparently set. The crystal formation is sometimes so extensive that the whole cement mass becomes porous, and with open spaces throughout its entire structure. It may be more properly called a crystal porosity. The whole mass of low fusion powder cements undergo complete or body crystallization. High fusion cement masses, that is cement masses made with high heat calcined powders, undergo but partial crystallization because of the size of the particles. They will have consequent less bulk changes, and crystal porous structure.

Oxy-phosphate cement masses are not liable to physical solubility or solubility in water. Cement pellets made with high and low fusion powders did not dissolve during four years in water at ordinary room temperatures, nor during twenty-four hours in boiling water.

CHEMICAL DISINTEGRATION.

Cement masses of zinc and other phosphates are soluble only in the acid, alkaline and acrid chemical agencies of the mouth, as herein shown.

PHYSICAL AND CHEMICAL EXPERIMENTS.

High fusion powders require less than half as much liquid as low fusion powders—40 grains of low fusion powder were mixed with enough liquid to make a thick flow, suitable for crowns and bridges. The resultant cement mass weighed 85 grains. Forty grains of high fusion powder required only 20 grains to make a similar flow and consistency. Considering the soluble tendency of the phosphates, this experiment shows at least one reason why cements made with low fusion, flaky, flour-like powders will be more soluble in the salivary secretions, than cement masses made with high fusion powder.

A thin flow mix, suitable for inlay work, required 30 grains of liquid for high fusion and 60 grains for low fusion powders, 40 grains of powder being used each mix. Double the quantity is required for the low fusion powders. A thick mix suitable for filling work required 10 grains of liquid to 40 grains of high and 15 grains of liquid to 40 grains of low fusion powder. Hence the importance of using high fusion powders to gain strength, less solubility, and greater stability of cement structure.

PHYSICAL AND CHEMICAL CONSTITUTION OF THE SALIVA.

The salivary secretions contain about 986 parts of water to the thousand general average. They are impregnated with various salts, acids, alkalies, and organic matters, which make the oral cavity one of the most intricate, physical and chemical laboratories in the whole economy. The saliva may be impregnated with lactic, acetic, muriatic, sulphuric, uric, oxalic, malic, and other acids, either free or combined, and salts may be found either in the healthy state or indicative of some diseased action. The acidity is sometimes so excessive as to corrode the gums and lips, to set the teeth on edge, and make them sensibly rough to touch and appearance. It may be excessively acid one day and extremely alkaline the next.

Saliva contains frequently, either free or combined, such alkaline substances and salts as potassium chloride, lactates, muriates and phosphates of potash, lime and soda. Sulphocyanide of potassium is frequently abundant. It is sometimes highly charged with sulphurated hydrogen. This gas is harmless of itself, but when absorbed by the salivary secretions of the mouth causes them to become very acid or acrid. This acridity is frequently so strong as to corrode and blacken amalgam fillings, and to tarnish (not corrode) gold fillings in a few days.

The ultimate crystal porosity of many cements causes them to absorb the salivary secretions into their crystal spaces. The water in the saliva carries with it the various acids, alkalies and salts with which it is impregnated, not only in contact with the cement mass, but into its porous crystal structure. Water is not only the agent of crystallization, but carries the agency of solution or disintegration into the mass. By direct chemical action or by chemical reaction, or by acrid erosion, oxyphosphate of zinc cements are dissolved in the mouth as follows:

ACID CHEMICAL REACTION.

If any acids in the oral fluids have a greater affinity for the soda and zinc oxide (or other phosphate base) in the soda, zinc phosphate cement mass than the phosphoric acid with which they are in chemical union, then such acids will attack, eat, dissolve or combine with said soda and zinc, enter into chemical union with them, liberate the phosphoric acid, and the filling gradually dissolves. Malic, uric, oxalic, lactic and some other acids are always found in the salivary secretions, either free, or combined. It has been shown by laboratory tests that these acids will dissolve dental cement structure.

ALKALINE CHEMICAL REACTION.

If any alkaline substance in the saliva has a greater affinity for the phosphoric acid than said acid has for the zinc, soda, aluminum, magnesia, or other oxide base with which it may be combined, then said alkaline agent will chemically unite with the phosphoric acid, liberate the zinc and other oxides, and the cement gradually dissolves. Potash, sulphocyanide, potassium, potassium chloride, chloride of lime and other alkalies and bases either free or combined, are frequently, some always, present in the salivary secretions. Aqueous solutions of most of these alkalies and bases will readily dissolve cement structure because of their higher affinities for its phosphoric acid, than said acid has for the zinc, soda, magnesia and other bases with which it may be combined in the cement structure. Sulphocyanide has a double reaction. It is somewhat acid in its nature, at least very acrid and is also alkaline. The higher affinity of the phosphoric acid in the dental cement mass for the cyanide in the saliva causes it to surrender its chemical union in the cement mass, which gradually dissolves. Sulphocyanide, being both acrid and basic, renders it liable to act both upon the acid and basic structure in the cement mass. The cyanides will unite with the phosphoric acids and sulphocyanide will eat the soda, magnesia and zinc oxide in the cement structure. This is what is called DOUBLE CHEMICAL REACTION. The lactic and muriatic acids in the lactates and muriates of soda, potash, and magnesia in the saliva have feebler affinities for these bases with which they are in chemical union than they have for the zinc oxide and soda oxide in the cement mass; hence they will give up their chemical union in the salivary secretions, attack and chemically unite with the zinc and soda oxide in cement mass, liberate the phosphoric acid and the filling gradually dissolves. This double chemical reaction will take place under all circumstances, unless the zinc oxide particles in the cement mass are calcined so hard and strong and tough as to resist the acid agencies of the mouth. Glass-like, fully vitrified, very hard and properly calcined zinc oxide particles will resist disintegration by the acid agencies of the mouth, but the alkaline agencies are still free to combine with the phosphoric acid in the cement structure. Unless the phosphate liquid is so formulated as to reduce the degree of solubility in water and consequent less solubility by its alkaline affinities and thus to render the cement mass less liable to disintegration, cements will continue to dissolve in the salivary secretions.

THE RELATIVE SOLUBILITY OF CEMENTS.

Under the same conditions, cements made with low fusion powders will dissolve quicker than high fusion powder cements. Acid agencies of the mouth will dissolve cements made with low fusion powders very readily, because the particles are smaller, not condensed by calcination, and in consequence the cement mass is more porous and crystalline in structure. It is more readily acted upon by the acids of the mouth, hence such cement masses wash out quickly. The alkaline agencies of the mouth have a strong affinity for the soda phosphate, which is almost universally used in cements, hence the low fusion powder cement masses are in consequence the more readily dissolved. The high fusion powder cement masses, because of the hard, diamond-like condensed state of its grit particles, will resist the action of the acids in the saliva; hence such cement masses are more durable.

PRESIDENT'S ADDRESS.*

BY G. A. RAWLINGS, D. D. S., BISMARCK, N. D.

It gives me great pleasure to address you today, and to assure you of my sincere appreciation of the honor you have conferred upon me by making me your President, and—in behalf of this association—I wish to express our sincere thinks and appreciation of the sacrifice made by the men who have come to our state, giving us the advantage of their knowledge and skill in their papers and clinics.

In this, our first gathering as a state organization, we begin an era of opportunity. In this day we find many efficient articles, written by men prominent in our profession—articles which we read as they appear in the journals, and which are of great value and importance to us in our daily work, but the true value is only realized when, in meetings such as this, we are able to come in contact with the authors of these articles and receive the stimulus of personal acquaintance, and are enabled to discuss with the brightest men in our profession points about which we have been in doubt. Often by merely reading an article, we do not grasp the point the author wishes to make, and therefore the article fails of its purpose and its value is lost to us,—when some word or hint dropped by the author or one who has mastered the subject will make it all perfectly clear, and we then realize the value and absolute necessity of association. There is a great deal of work to be done, if we are to accomplish what we should, namely, the development of each dentist, so far as he is capable of being developed. Character goes hand in hand with skill as regards a dental surgeon. Both qualities are most desirable in a man who takes up our work, and this association can exert a wide influence by coming out squarely for sound principles.

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*Read before North Dakota Dental Association, at Fargo, May 14, 1907.

We must not expect that a young man, starting in to practice, often alone in a town, will grow to be a good and great dentist without encouragement. Bring him into the association, give him advice when you see where he needs it, and where you can help him. The real value of ethics is taught when we show that we are earnestly interested in the young man's success, and that his success means ours. The whole profession gains or loses by the advancement or retrogration of one member. The public class us together. So, build up the man, if he is capable of it, and nearly all men are; but, if we find some who are not worthy, we should devise some means of disposing of them. Such men are bent on breaking all the rules by which we are governed. They destroy the confidence of the public in the efficiency of our advice and work which we have spent years in building up and perfecting. Many people, after a visit to some of these, will tell us that they do not intend to have any more work done, that it does not last and isn't worth while. We should take some steps to prevent in our state the destruction of the confidence of the people in the integrity of our profession.

We have adopted the National code of ethics, and it is hoped that all men in the state can honestly subscribe to its principles. Although the spirit of unselfishness might appear sometimes to work against us, still the wisest and best men have practiced it to their advantage, and to the great benefit of their fellow men.

This association was organized for the purpose of improvement of its members, and I would recommend as a means to this end, that an outline be made of a course of study each year, consisting of two or three subjects, to be followed by the members and studied as thoroughly as possible before coming to the annual meeting. In order to carry this out, the secretary of the executive committee could send out to the members of the association, several months before the date of the meeting, the subjects that are to be given at the annual meeting, together with complete reference notes, so that we may be able to read up and inform ourselves as thoroughly as possible in advance on the various subjects and be in better position to discuss them intelligently when they are brought up in the meeting, and have a clearer understanding of them as they are treated by papers and clinics. As we only improve in proportion to the amount of work we do, it seems to me that this plan would work to the benefit of every man in the association. Some of us might think that we could hardly find the time for reading up on these subjects, in addition to our daily work, but I think we would find that it would be to our advantage in the long run. I think we all thoroughly appreciate the value of meeting and becoming personally acquainted with the men whose articles we read and who are the ablest men in the dental profession. The great object of our association is just this thing, the interchange of ideas and the benefit derived from the experience of others.

UNION OF THE PULP OF A REPLANTED TOOTH WITH THE TISSUES FROM WHICH IT HAD BEEN SEPARATED.—A SEQUEL.

BY A. H. FULLER, M. D., D. D. S., ST. LOUIS, MO.

In the February, 1899, number of THE DENTAL REVIEW (Vol. XIII, No. 2) an article was published with the following title, "Do the Pulps of Replanted Teeth Ever Reunite with the Tissues from Which They Have Been Separated."

The occasion for the article was a statement made before the New Jersey State Dental Society by Dr. Register and published in

Items of Interest of September, 1898, page 693. He is reported as saying "I do not believe for a moment that under any conditions a tooth can be removed, replaced, and the circulation in the pulp reestablished." "I think such a thing is absolutely impossible."

In The Dental Review article, which was about four pages, I cited a number of cases reported and published in the dental journals that, if true (and without doubt they are true), would prove Dr. Register's belief to be incorrect and the statement misleading.

Within the past year it has been my good fortune to have had an opportunity to establish beyond a doubt the position I took that union is possible and does occur under favorable conditions and proper treatment.

I have the evidence of the patient and the patient's mother, also that of Dr. Frederick S. McKay, now of Colorado Springs, Colorado, who took charge of the case, and my own testimony to offer that the tooth was out of the mouth and on the floor, and can produce the patient himself to establish the present condition of the tooth.

One year ago Master Edwin H., ten years of age, while ascending steps leading to the school room, slipped, striking his face against an iron post, cutting his lip, knocking out the right upper temporary cuspid and forcing the right upper permanent lateral incisor from its socket although still retained in the mouth. In this condition he was brought to my office an hour or more after the accident happened. I at once went with him to the office of Dr. Frederick S. McKay, an orthodontist, at that time located in the building on the same floor as myself and only a few doors removed. When seated the patient presented the following appearance. Right upper lip cut and badly swollen. Right upper temporary cuspid gone (knocked out). Right upper lateral incisor broken into the mouth and remaining in the broken socket with cutting edge presenting toward the soft palate. In trying to bring this tooth to its place in the arch it was broken from its attachment and fell to the floor. The tooth was bathed in a weak antiseptic solution, the socket syringed out with warm water, the tooth carried to place and retained firmly in the position it had formerly occupied in the arch. The retaining appliance did not interfere with the occlusion of the teeth, was not at all uncomfortable, was absolutely rigid and permitted the syringing and cleansing of the wounded lip and alveolar process. Recovery was rapid. The condition at this time is this: The lateral incisor is firmly in its place in the arch, perfect in color, gum perfect in every feature, the pulp alive and the permanent cuspid just erupting.

Drs. Edward H. Angle, G. A. Bowman, H. F. Cassel, Wm. R. Smith, S. H. Voyles, B. E. Lischer and other practicing dentists and orthodontists of St. Louis have seen the case and will testify to the facts as here given, and the patient is living and can be produced at any time to verify the statement made.

I would describe the attachment used in Master Edwin H.'s case as follows: A plain band bearing an "R" tube soldered horizontally was made and cemented to the extracted lateral first. Next, a similar band with tube was made for the firm central, the tubes being placed so as to be in the same horizontal line. A piece of the angle "G" wire was inserted through both tubes and the band for the central cemented to place, carrying at the same time the extracted tooth into its socket. The surplus ends of the wire were then clipped, leaving sufficient length to bend up or down distal to each tube. This fixture held the lateral rigidly in the socket until a new union was formed. It remained in place about six months.

I have been thus explicit that it may be established what should and should not be done in similar cases.

LEAD POINTS IN THE TREATMENT OF ALVEOLAR ABSCESS.*

Demonstrating Dr. J. H. Spaulding's Method of Root Filling.

BY DR. E. FRANK DAY, D. D. S., LONDON, ENGLAND.

PREFACE.

When I wrote this paper, I was not aware that Dr. J. H. Spaulding of Paris had read a paper on this subject at a conference held at Basle in 1904, stating that he had been doing this operation for the last thirty years, and quoting cases, although I made inquiries through the Dental Manufacturing Company, who have bound copies of dental publications, if there existed any literature on the subject, and the answer I received was: "He did not discover any article * * *" I therefore went ahead and gave my own experiences, which I now offer in confirmation of Dr. Spaulding's operation.

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*Read before the American Dental Society of Europe, March, 1907.

Mr. President and Gentlemen:

My reason for writing this paper is that I wish to convey to the members of this society the result of a series of experiments which I carried out about three years ago, and which I have since confirmed by a great number of cases and in fact have adopted the method as a reliable treatment.

At this time I had had a number of troublesome cases of acute alveolar abscesses which were very difficult to cure, and though possessing the same symptoms which we meet with every day, did not yield as readily as I should have wished. The cause of this state of affairs I do not know, and at the time I supposed I had had a run of bad luck, but it gave me ample food for reflection, and I determined to try what was then, to me, a new method of treatment.

Now, before I go any further, I must draw attention to the condition of the roots to which the abscess owes its existence.

It has, I am sure, been the experience of every one here, that it is easier to treat a root with a closed foramen (if I may be permitted this expression) than one with an open foramen, and it is this latter class of roots with open foramina that I speak of. In the event of killing a pulp, the process is to remove the pulp as thoroughly as our individual ability permits; in fact, we remove it all, and see it, but the methods may differ as to how we sterilize the roots afterwards. Some use coagulants, some oils, or other antiseptics, but I do not wish to go any further into this matter. I take it, we all aim at closing the tiny foramen, if not by the antiseptic, by the root filling. As I said, I am dealing with the class of roots with open foramina, whether they were opened by intent, or misadventure, or whether they have a natural but abnormally large opening.

The method consists, in the first place, of treating the abscessed condition, whether it be acute or chronic, blind or with fistula, by whatever means you wish to employ, and having got the surrounding tissue as healthy as it is possible to get it,—prepare for the second part of the treatment. This consists in carefully reaming out the root just up to and before one reaches the foramen, so that the foramen itself is the most constricted part of the canal, and then measuring the exact size of the foramen, to plug it with a tapered lead point which should protrude through the foramen; this point can be then carefully malleted upon so as to absolutely seal the apical foramen.

To effect this, I always have on hand a number of sizes of lead wire with which I measure the opening, using, say, one or two sizes larger to make the said point. Having selected the wire, I taper the end and nick it all around with a knife, push it into position, twist off the stem and tap the tapered end into place and fill up with gutta-percha, or insert a pin for a crown. I sometimes dip the point into chlora-percha, but this is not necessary.

Now, gentlemen, you may probably say we have used gutta-percha in a similar manner, but without protruding the point through the end of the root, and have had no difficulty, and no recurrence of the abscess. All I can say is,—that I have done so also with varying success; sometimes there has been no recurrence, sometimes there has, and I have had to remove the gutta-percha cone on account of recurrence of the abscess in an acute form, treating the root again and filling it carefully again, and then, to my horror, taking it out and treating again and so on.

But I tell you candidly, that by inserting a lead point through the apical foramen of an abscess root you will get no recurrence. The lead seems to act as a soothing influence on the surrounding tissues, and by its antiseptic qualities (I say this for want of a better word) is tolerated by the tissues, and allays any further irritation.

The lead point rounds up the jagged ends of the root, and removes that source of irritation, and in fact has acted as such a consoler on my patients and my own nerves, as to make me feel happy when I have to treat an abscess condition of a root with enlarged apical foramen.

In order to demonstrate my paper, and especially the practical side of it, I have had skiagraphs taken by means of x-rays, which I propose to have thrown on the screen, and to each I will give a short history.

CASE I.

This case of a lower right bicuspid in an abscessed condition came to me in June, 1904. The root had a porcelain faced gold crown with a pin in it, cemented on. After two sittings I was able to take the crown off and extract the pin. On removing the pin, the pus welled up and I found a large opening at the end of the root. This was treated on and off for two weeks in the usual manner and I was able to fill the root by careful measurement with gutta percha. Two days after, the patient came in in great pain and I had to take out the root filling, the root being in an abscessed condition, when I again treated it for two weeks and then filled it with gutta-percha, but again it failed, and I had to take out the gutta-percha and repeat the treatment. When I had rendered the tooth healthy, I inserted a lead point in the manner I have described, and from that time to this the tooth has been absolutely firm and serviceable, there being no irritation at all.

I would draw attention that the pin in this case is lead wire, and is not attached to the crown, as it appears, but is simply the whole length of the tapered lead wire, so that it could be more easily removed **if necessary.**

CASE II.

The History of a Left Upper Lateral—January, 1905.

Seven years ago, rhizodontophy was performed on this tooth by an unknown dentist, but it broke out into an abscess at least twice a year. It then got into the hands of another unknown dentist who stuffed it full of iodoform and cotton, which did not answer any better. The patient had a swollen face, with a copious discharge of pus when the cotton was removed. When the patient came to me, he was suffering from an acute abscess. I opened the tooth, took out a lot of cotton, some of which had been pushed through a large opening at the end of the root.

I did not fill it with gutta-percha, knowing it would fail, but having treated it carefully for three weeks and rendered the parts thoroughly healthy, I was enabled to plug the end of root with a lead point in the manner I have described. The skiagraph shows the whole length of the tapered lead point running from one end of the tooth to the other. There is also a slight outline of a porcelain inlay.

CASE III.

This case came to me with an acute abscess in November, 1904.

After treating it for two weeks and getting the parts healthy, I filled the roots as before with gutta-percha, but after forty-eight hours I had to remove it. I did not try gutta-percha any more, but filled the end with a lead point, after which I pivoted a crown on the root. You will notice the constriction two-thirds up the root, showing where the pin ends and the point begins. You can also see that the point goes out of the root for about one-sixteenth of an inch.

There were two sinuses to this abscess, which I found impossible to close, but after I had inserted the lead point, they were closed when I saw the patient soon afterwards. I saw the patient every six months after this, and since then there has been no further trouble.

CASE IV.

This case of a left upper lateral with a pivot, came to me in an abscessed condition in January, 1904. After removing the crown and treating the root, I discovered the largest foramen I have ever met with in a lateral, the root had evidently been drilled through. I treated this similarly to the foregoing cases, and at last inserted a lead point, and it has never troubled since. The root was so short and hollowed out that I could not rely on the pin holding the crown in safety, so I had to depend chiefly on the collar and a small pin. You will notice an attempt at division between the lead point and the pin. This photo is not a very good one, owing to the palate being so shallow.

CASE V.

This case came to me in June, 1904. I killed the pulp in this tooth myself, and cut off remainder of crown of tooth, and crowned root with a Logan crown. At the time I noticed an enlarged apical foramen and filled it with gutta-percha. All went well for three months, at the end of that time a swollen face presented itself, and on making sure there was pus present, I took off the crown and opened through the end of the root. A discharge of pus followed. After treating the abscess, I filled the end of root with lead point. The patient has been very comfortable ever since.

In conclusion, I may say that now I do not hesitate to enlarge the apical foramen of a root, in such cases syringe through it and close up the fistula and then resort to the lead point treatment.

Gentlemen, I thank you for your attention, and I hope you will not think that this affects so small a number of cases in your practice, that it is too insignificant a subject to dwell upon.

FOR FIFTY-SIX YEARS A CROWN.*

BY E. FRANK DAY, D. D. S., LONDON, ENGLAND.

Mr. President and Gentlemen:

The crown shown with a cross near it was put on by a dentist living in George street, Hanover Square, London, on May 1, 1851. In spite of looking up directories and submitting names of dentists living in George street at that time, I cannot bring back to the lady's memory the name of the operator. The patient, however, is quite clear that she was brought up to London by her mother for the purpose of having the tooth crowned and is absolutely certain of the date. The lady was seventeen when the tooth was crowned.

The patient writes me:

"The tooth had always been robbed of its enamel in consequence, I was told, of severe calomel treatment in my infancy. It had quite a hole through it when I was about fifteen, and I had to fill this up with gum mastic for improving the appearance till the new tooth could be done, on my leaving the school-room.

"It is partly, I suppose, because of the accidental cause which necessitated a pivot tooth when so young (seventeen) that the case is unique, now that I have lived on into old age—the long opportunity of watching—or hearing of the case must be rare."

The pivot consists simply of a tube tooth and a piece of gold pin wire. The face of the tooth is neatly grooved to represent the condition of the enamel of the other incisors. There is no diaphragm.

CASTING GOLD INLAYS.**

BY O. SOLBRIG, D. D. S., PARIS, FRANCE.

Dentistry has made great strides within the last twenty years and has developed from infancy to a more mature state. Empiricism has had to make place for exact science.

Experience and failures have often been of greater value to us than the teaching we received and which often was but the interpretation of personal views. The endeavor has often been greater than the result. Although the laws and principles concerning the different branches of dentistry are better understood and are taking sharper and more definite outlines; although many questions of great importance have been settled, still we have only arrived at our boyhood and are yet in darkness about many questions concerning our profession. Colleges and literature being unable to answer all the questions we would like to put, we are all looking at the dental profession as a whole, always eager to listen and to learn, whenever one of its leading exponents has something new to tell us. Fortunately, we have never been without great masters to teach us different lessons on different subjects. Doctor Jenkins has settled one question which was greatly discussed several years ago; that is, the durability and practicability of inlays. Since the introduction of Dr. Jenkin's porcelain enamel nearly every meeting has reported on that subject, and has helped to prove that inlays have secured an important place in the list of permanent fillings; and what is true with porcelain inlays has still a greater application to gold inlays, as we shall see later on. The task has been made easier for us, thanks to our great pioneers; and it is reasonable to conclude that we may have the same confidence in the durability of a perfect gold inlay as in that of a perfect porcelain inlay.

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*Read before the American Dental Society of Europe, March, 1907.

**Read before the American Dental Society of Europe, March, 1907.

Now the most important question is: how to make a perfect gold inlay? Fortunately nobody has waited for me to accomplish that. Many perfect gold inlays have already been made and rendered excellent service for several years. But if you will grant me a few moment's attention, I shall endeavor to explain a new method of making gold inlays, obtaining, in an easy way, the most accurate results possible.

As regards the cavity preparation, we must bear in mind different points which are characteristic of gold inlays. Of course, all undercuts have to be avoided. The edges of the cavity ought to be decidedly bevelled as in the case of a gold filling, thus having the great advantage of the gold overlying and protecting the fragile enamel borders. Whenever possible, we have to make use of the anchorage that a dove-tailed shaped extension into a fissure will afford, bearing in mind that thin edges and narrow prolongations are perfectly admissible in gold inlays, in contradistinction to porcelain inlays.

Having observed all these points, the next step, and perhaps the most important one, is to obtain a perfect matrix representing the exact shape of the cavity. The best and most convenient material to use is soft platinum foil 1-1000 of an inch in thickness. In simple cavities we can easily make a perfect matrix with spunk and burnishers. But, in more complicated cases, it is advisable to shape the foil out of the mouth. To this end, it will be well to take an impression in compound and pour a model in Spence's metal which is done in a few minutes. This enables one to swage the foil into the most complicated cavity, with the greatest ease possible. A piece of pure gold is now melted in the bottom of the matrix to stiffen the platinum. The whole is tried in the mouth and the margins reburnished to ensure perfect adjustment. The matrix is now filled with hard wax to restore the exact contour, contact point and occlusion. (Fig. 1.)

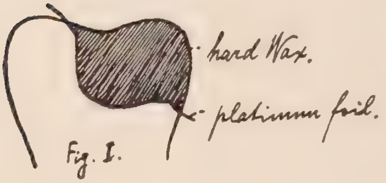

Fig. 1.

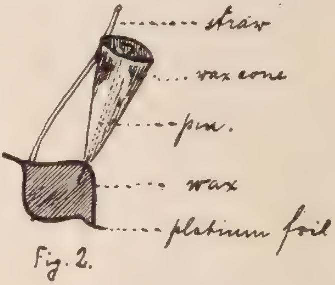

Fig. 2.

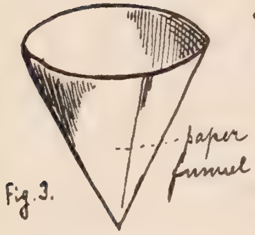

Fig. 3.

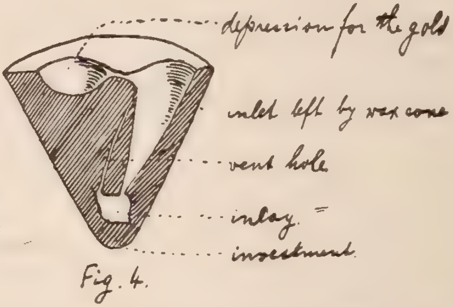

Fig. 4.

This can be done with comparative facility as the gold has stiffened the platinum foil enough to be handled without fear of changing its shape. The rubber dam need not be applied; on the contrary, the moisture will prevent the wax from adhering to the tooth. The platinum impression containing the wax is carefully removed,—this requires but ordinary precaution, if the cavity is well prepared,—as the hard wax will help to maintain its shape.

The patient may now be put off for a next appointment or asked to wait for about 20 minutes, the time required to finish the inlay in the laboratory, which is done in the following way:

Attach to your inlay thus prepared a cone of wax containing in its center an ordinary pin to facilitate the attachment. At the opposite end, fix a little straw of a whiskbroom intended to leave an air vent and it is already for investment. (Fig. 2.)

I have tried different kinds of investment material and have found them equally good. It matters little whether you use pumice stone, molding sand, soapstone, or marble dust to be mixed with plaster, equal parts, as long as they are thoroughly mixed and employed in a rather liquid state. To give a convenient shape to the investment, make a paper funnel and fill it with the material and insert the inlay a little towards one side. (Figs. 3 and 4.)

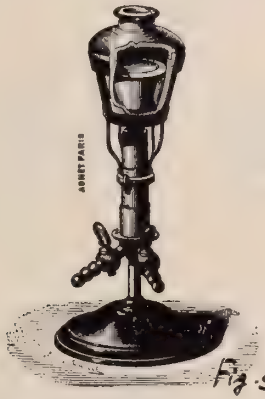

Fig. 5.

While still soft, cut a shallow depression in the upper surface of the investment, big enough to receive the gold to be employed. Pure gold is to be preferred, but a lower karat may be employed, if all alloys of lead, tin and zinc are carefully avoided. I particularly wish here to give credit to our friend, Dr. E. Burt, of Paris, for having suggested melting the gold right on the investment, thus greatly facilitating the act of pouring. After the plaster has set, warm it slightly to allow the removing of the wax cone with its pin. The remainder of the hard wax in the matrix and the little straw will burn out in the heating up for casting. This is best done in a little furnace which I find very convenient and effective for this purpose. (Fig. 5.)

A few minutes will be sufficient to heat up the whole mass to red heat. The gold, on top of the investment, is now melted with a blow-pipe, the furnace inclined to allow the gold to flow into the matrix through the funnel-shaped opening and the inlay is practically finished.

Throw the hot investment into water; this will quickly cool it and easily free the inlay from the plaster. The result will be a perfect reproduction of your wax with right contour, occlusion and contact point. Cut off the gold cone and the inlay is ready to be tried in the mouth and polished. After making sufficient undercuts in the gold, with a saw, a file or a bur, the operation is terminated by setting the inlay with cement. Our experience with porcelain inlays will teach us all the details concerning this part of the work. The finished inlay will not only have all advantages of a gold filling, but it will be superior to it in many respects. Although gold fillings will

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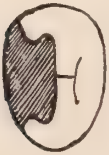

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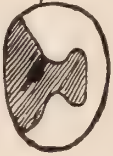

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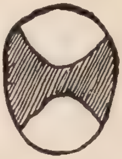

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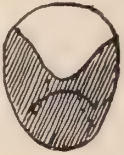

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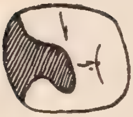
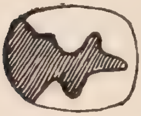


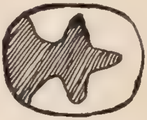
up. molar.

11



1st & 3rd l. molar

12



2nd l. molar

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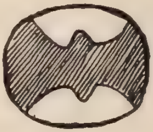

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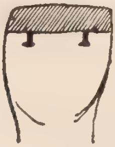

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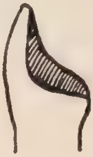
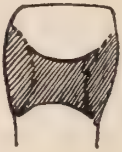


16.



never be supplanted by gold inlays, yet there are many cases where nothing else will be better indicated.

I am much tempted to formulate a few rules as to these cases, and will take the liberty, at least, to make the following suggestions:

First.—Whenever you can make a gold inlay in the same time or quicker than it would take you to put in a gold filling in the same case, a gold inlay is indicated, because it is less tiring to the patient and to the operator. You will also cut more liberally all fragile edges and follow more strictly the laws of "extension for prevention," as the time for making the inlay will remain the same.

Second.—Whenever a tooth is too weak to hold a good filling, a gold inlay is indicated, as by means of the cement it will strengthen the tooth.

Third.—Whenever the sensitiveness of the tooth or of the patient, as in the case of very nervous persons or children, will not allow of making a big gold filling, a gold inlay may be employed.

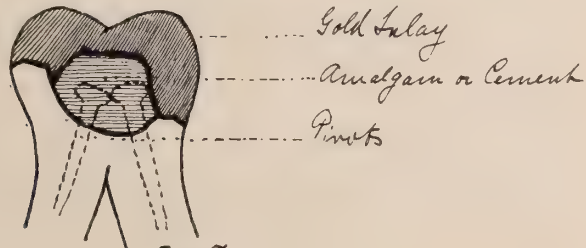


Fig. 17.

Fourth.—Whenever great resistance is required to the stress of mastication, as in case of raising the bite by means of fillings, gold inlays are indicated. (Figs. 14, 15, 16.)

Fifth.—Even in cases where the application of the rubber dam is impossible, the tooth can still be filled with gold in the form of a gold inlay.

Enormous gold fillings, big amalgams and many crowns can often be advantageously replaced by gold inlays. I think the time has come to change the well-known expression of Foster Flagg to:—"In proportion as a tooth needs saving, a gold inlay is indicated." This applies more particularly to bicuspids and molars, using porcelain in the six anterior teeth whenever possible, with perhaps some rare exceptions.

Figs. 6 to 16 will show inlays for typical cases which it will be well to follow as near as possible.

Gold inlays will often be of great service as abutments for small bridges, thus saving considerable tooth structure and avoiding the unsightly appearance of gold crowns.

If we have to use a gold top, this method will often enable us to do this in a more perfect manner than we have ever known before. (Fig. 17.)

After cementing two strong pivots into the canals, cover them with gutta-percha to allow of taking an impression in the usual way. After the tooth is built up by hard wax to its correct outlines, with perfect contact points and sharp occlusions, with a spoon excavator, cut a big hole in the center of the matrix and hollow out the wax. This can be done whenever desirable in all big gold inlays, thus making hollow gold inlays. As the investment material will fill up this excavation, the result will be a perfect-fitting gold crown, avoiding unnecessary cutting, preserving the bulky portion of the tooth, doing away with the free edges of a band irritating the gum, having on the contrary perfect smooth edges, allowing of easy control, the contact points more perfect than in case of a band and a strong biting surface that will never wear out.

As the result of this work has been very gratifying and encouraging to me, I shall be pleased to have you meet with the same success, and this is my only excuse for presenting you this method.

EDUCATING THE PUBLIC DENTALLY.*

BY W. C. MCWETHY, D. D. S., ASHTON, ILL.

A subject as broad as all humanity and as deep as the very unknown.

I do not attempt to solve this great question, but better fitting perhaps to touch with subtle delicacy the fringe only. But with your help in discussion, may we not hope to assist our co-workers in casting the faintest shadow upon the screen of educating the public dentally.

Before an ethical society it would be folly to dwell upon the trashy commercialist who sees from only one point of view and enters a profession only to narrow himself and all who come in contact with him, but also to render hemself nauseating to the enlightened, be they professional or the laity.

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*Read before the Northern Illinois Dental Society, October, 1907.

But there is, however, a class of advertising, or in other words a manner of educating the public which goes by the name of ethical advertising, which under certain circumstances might become quite tempting and, in fact, lead away those who would otherwise become ethical practitioners. This class of advertising is the pamphlet system, written up by some one purely for the purpose of making money and being offered to the profession as the dentist's own, with his name printed on them as "Doctor So-and-So, The Dentist, Rockford, Ill." The very absurdity of the thing!

When our name is printed there we have printed a lie. It takes from two to six lies to cover up one lie, and if we have sent out five, ten, or even fifteen hundred of the pamphlets, we have lied that many times. Then multiply that by anything from two to six and when you show me your figures I will tell you where the confidence of your patrons will go.

That is, however, only one small part which we should take into consideration. Every practitioner has a duty to perform toward his competitor, and the competitor can buy these pamphlets, if he chooses, for there are more than one being put out. Then you have strife and cut-throat going on among yourselves.

Telling the untrained individual to use a tooth-brush without a demonstration and, to use any powder and mouth-wash the druggist hands out,—that seems to be about the teaching in that department.

"Speaking of fillings, they call them "air-tight plugs of gold, silver and cement." And crowns, using their own words, "The operation is as strong as a natural tooth and in ordinary conditions will last a life-time." Such talk as that is misleading.

Yet I believe pamphlets might be made useful. They should be issued without a writer's name attached setting forth the need of caring for the teeth for health and happiness. They should be written in simple language, so that every one could read them and understand their teachings. Such a pamphlet, gotten out by a society and distributed by the members for the betterment of dentistry and the aid of humanity, would not mar nor scar the name of any ethical dentist and might add greatly to the knowledge of many in the care of the teeth.

Oral hygiene in our public schools is another method of educating the public dentally and is a method that is being much talked of. And why not, for it is the proper place and time to teach the children who in a few years will become the parents.

In some of the larger cities examinations are made of the teeth and physical conditions of the children. There is no doubt that they are doing good and it is a step in the right direction. Many parents interested in the welfare of their children neglect this very important factor in good health, caring for the teeth. They are ignorant of the fact that earache, weak digestion, St. Vitus dance, epilepsy, headache, and physical breakdown often owe their origin to defective teeth.

Many nervous wrecks who are supposed to be invalids, are suffering more from defective oral conditions than any other cause. It has been said that 95 per cent of people wearing artificial dentures are regular contributors to the physician, the patient claiming heart-trouble, which is really stomach trouble, caused by the over-working of that organ. We all know how the pneumogastric nerve supplies both the stomach and the heart and by the over-working of the stomach it increases the activity of the heart's action till it becomes weak, as any wornout machine, by excessive use.

How are we to impart this knowledge? Through the schools is the only way. Teach the child to form regular habits of right living and he will follow them through life. I do not approve of the lecture method in public schools. It is impossible for a dentist or physician to step into a school-room and lecture or talk to a room of children and have their attention so as to teach them with the results that their own teacher could attain.

In my estimation we need a small text-book treating on the three great divisions of human healing science, medicine, dentistry, and the specialty of the eye, ear, nose and throat. A written text would be something tangible, something that could be read or told twice alike and with the same understanding. This book should be placed in Normal schools, and wherever students are in training for teachers, and made a part of the regular curriculum.

It should be a requirement by State law to have a thorough knowledge of this work before a teacher's certificate should be granted.

To what extent should this text take up the cause, effect and cure? Only sufficiently to give the teacher the required knowledge to impart to the pupils and to detect these conditions when they appear before them. Mouth-breathing, improper vision, nervousness, drowsiness—thus an estimate of the general strength of their pupils should be considered.

An examination of the teeth, mouth, eyes, ears, nose and throat and general health should be made from time to time and special examinations made any time by recommendation of the teacher. From the teachers' text can be drawn an elementary edition to be used with children in the lower grades and be made a part of the public school course. Thus by the teacher's vigilance and the examinations by the professions the pupils' training would be continuous with their school years.

What I have said thus far has dealt with the public as a class. There is a much more vital phase of the subject—the personal contact of the dentist with the public. There is nothing that instills confidence in the minds of the public so much as to feel that their dentist is a thoroughly qualified member of his chosen profession.

I am proud of our colleges and the position they hold at the head of dental education of the world. However, if we had less lecture and more real class work, in some of the branches at least, they would turn out students much more familiar in the use of the knowledge they had gained. It is easy to sit and listen to some one, expert in his special branch, tell all about it, but to actually take in hand drugs, for instance, weigh and measure them; write the prescription, and then fill it as if the case were in hand; this is much more teachable than hearing it told.

I believe orthodontia is a subject that is very much neglected by the general practitioner who is away from the reach of the specialist. We who practice in the smaller cities and towns, where people do not go fifteen or twenty miles for breakfast, must perform these operations for facial deformity or let the patient go through life unhelped and thus narrow the appreciation of our professional ability in the eyes of the public.

I say to those practicing in the country towns, keep abreast with the times and do not let your brothers of the city surpass you in any line. Do for your patrons all the different classes of work that can be done in the city. You not only raise your own standard in their opinion, but that of the profession as well. And the public, entrusting themselves to your care, have been educated in the latest and most refined methods of caring for their teeth and oral hygiene in general.

DENTAL JURISPRUDENCE.*

BY J. H. DALBEY, D. D. S., ELGIN, ILL.

If Celsus said truly that all parts of medicine were so interwoven as not to be separable, argument is unnecessary to show that dentists belong to the class of medical men. It is commonly acknowledged that the clergy were well-nigh the only practitioners of physic and surgery prior to A. D. 1163, when the Council of Tours, perceiving that the success achieved by the faithful was but a snare of the arch enemy to divert priestly souls from holy things to things temporal, issued the decree restricting excursions from the cloister and the absorbing practice of healing arts by the priest or monk. Thereafter surgery fell into the hands of smiths and barbers, in oblivious commemoration whereof the barber erects his pole to this day. The greater surgical operations fell naturally into the better educated and more skilled hands and surgeons formed into colleges, "but tooth pulling," which by some is even yet understood to constitute dentistry, remained until comparatively recent times, together with cupping and leeching, part of the barber's business.

And if it be true that the world takes us at our own estimate of ourselves, it is in no small degree the fault of the dentists themselves that they continued so long to occupy a less dignified plane of usefulness than their medical brother physicians and surgeons. Their advertising by hideous displays of artificial teeth and instruments, their lack of organization, ethical laws and possibly, even, the similarity of the dental chair to that of the barber, all tended to preserve the tradition. But all this has been changed. The organization of societies and colleges, the enactment of registered and licensed laws, the extraordinary progress of dental art and science, and the high character of their leading exponents have been such as to elicit admiration, and today dentistry is considered a distinct and separate profession, having its own schools and colleges and a separate and distinct law regulating its practice. The practice of dentistry and the relation of a dentist to his patient, so far as the law is concerned, is exactly the same as the laws regulating a practitioner of medicine and where it is impossible to find an opinion on a legal point, medical jurisprudence is the procedure used.

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*Read before the Northern Illinois Dental Society, October, 1907.

The question has indeed been raised in the courts as to whether a dentist was a tradesman, an artisan or a professional man. Thus a dentist who made, at her request, two sets of teeth for a lady who died before she could try them in, was held in a suit against her executor incapably holding their value upon the ground that the action was not for services, but for goods sold and as not maintainable under Section 17 of the Statute of Frauds. A learned jurist holds that the vocation is of a duplex nature; that dental operations are for the most part mechanical and so far as tools are employed they are properly so, but is this not so with the surgeon's saw?

The court said indeed dentistry was formerly purely mechanical and instruction in it scarcely went beyond manual dexterity in the use of tools and a knowledge of the human system generally, and of the diseases which might affect the teeth and render an operation important was by no means considered necessary. Of late, however, as the physiology of the human system has become better understood and the relation of the various parts and their mutual dependence became more clearly recognized, dentistry has made great progress as a science and its practitioners claim, with justice, to be classed among the learned professions. The most recent expression of judicial opinion that dentistry is a medical specialty is in Flickinger's case, wherein the Missouri statute exempting a dental practitioner from jury service, was held to apply to one lawfully practicing dentistry. The court said, "While dentistry as an independent calling may have had an humble and comparatively recent origin, it has now become a very important branch of medical science."

Dental jurisprudence or legal dentistry may be defined as the science which applies the principles and practice of legal procedure, so far as they may be applied to dentistry. One of the most striking developments of modern jurisprudence is in the line of expert testimony. The common law recognizes the right of parties to call as witnesses those who are specially skilled in, or familiar with, any particular art or science in order to explain the meaning of words or phrases having a peculiar meaning in that art or science. From this has developed the practice of calling an expert dentist to give his opinion in cases involving dental questions. The payment of fees for expert witnesses is regulated by his standing professionally and his number of years of experience.

Malpractice is defined as bad or unskillful practice on the part of the dentist attendant, whereby the results are such as to injure the health of the patient, the dental organs or destroy his life and may be classed in three ways, namely: Ignorance, passive or gross negligence. Ignorant malpractice consists in the performance of operations which do harm and which a well educated and scientific practitioner would recognize as inappropriate to the case and likely to be followed by injurious consequences.

An example of passive malpractice is where a practitioner allows a patient to bleed to death without taking proper measures to arrest the hemorrhage, or cause a dangerous hemorrhage for want of proper care.

Gross negligence may be defined as wilful and careless inattention on the part of the dentist to the case on hand, a total disregard for his own reputation and the life of the patient. While a dentist is bound to give his patients the benefit of his best judgment, he is not liable for a mere error in judgment unless it can be shown that the latter is so gross as to be inconsistent with reasonable care, skill and diligence and the fact that a dentist renders services gratutiously does not affect his duty to exercise ordinary care, skill and diligence. As a rule a recovery by a dentist for his services will bar future action for malpractice.

The amount of fees to be collected by a dentist for his services is usually determined by his standing professionally, whether or not he is making a specialty of a certain branch of dentistry, as, for instance, orthodontia, and is considered an expert in a certain line, in which case he may demand a much larger fee than the ordinary practitioner. The ordinary practitioners' fees are determined by the testimony of other dentists as to their usual fee on a given amount of work or operation.

The necessity of always having witnesses at hand when anesthetics are administered, particularly to female patients, has more than once been insisted upon and an anesthetic should never under any circumstances be administered without an assistant, except under the circumstances of an emergency. When an operator is compelled to accept the services of an unprofessional person he must take the entire responsibility of the administration.

The accidental extraction of the wrong tooth by the operator occurs more frequently since the introduction of anesthetics and again, two teeth may be so closely attached as to make it impossible to remove one without the other.

Luxation of the lower jaw has occurred when great force has been necessary in the extraction. A fracture of the jaw, considerable portions of the alveolar process being brought away by the tooth has been the basis of malpractice suits. Such accidents will occur in the most skilled hands but if the mouth be carefully kept clean, and septic complications avoided, the patient can scarcely have been sufficiently damaged to warrant a suit.

The first state law in the United States, regulating dentistry, was passed in Alabama. To make a synopsis of the statutes of our states is hardly within the province of this paper, and the laws of the states regulating the practice of dentistry are continually changing. It may be said generally, however, that the prevalent requirements for licenses are that the candidates shall appear before a Board of Dental Examiners appointed by the state of the State Dental Society and either satisfy them that he holds a diploma from a college in good standing or submit to their examination. The courts will not allow a state board to delegate its power to a national board.

The common laws apply to dentistry the same as to other businesses. Partnership signs imply a partnership and divides the responsibilities financially and legally, so that if a partner in a dental firm is sued for malpractice the other partner or partners are liable under the law.

The substance of the foregoing paper is a compilation of dry, hard facts, very incomplete, but such as they are, taken from some of the best authorities.

With your indulgence, I should like to advance a few personal views and opinions of my own. No profession is greater than its members. A small minded, narrow souled individual will do more to harm a calling or profession in the eyes of the public than ten men can repair. We who do not honor our avocation in life need hardly expect the public to do so. So much has been said and written about our relation to the medical profession; some of our brothers seem satisfied with being the tail to the medical kite rather than having a full-fledged kite of their own. With all due reverence to the medical profession I feel that we are relieving almost as much suffering as they and are at least making this world a better and happier place to live in. The title of doctor, I have somtimes thought, has been the reason for the anxiety on the part of some of our brothers believing in a vague way that we could only use it with their consent and sanction.

Now, my friends, the word "doctor" is not copyrighted by the medical profession and is not used generally by the practitioners of medicine in European countries and, in fact, means teachers or masters, and is also used to designate certain parts of machinery. The title applying to medical practitioners and dentists and to other callings, other than to heads and teachers in universities, is almost entirely of American origin.

Far be it from me to advocate anything but harmony between the two professions as they should and do go hand in hand. I merely wish to point out that there should be no condescension either way.

How shall we treat our brother practitioners? For the sake of your conscience—as well as your bank account—observe the golden rule, as a business proposition it pays. If you wish to see this exemplified, the next time you are in Elgin ask one of our merchants or business men to direct you to a good dentist; he will invariably reply "that they are all good, as good as you will find anywhere." Do you see the philosophy of that, my friends? You can at least see that we are not driving any dental work out of the city. In all candor and sincerity, my hat is off to my brother dentists of the city of Elgin. Nine times out of ten, when a malpractice suit against either a dentist of a physician is started, it is instigated by a jealous practitioner of the profession. The public will have more respect for us and our profession if we stand together. If your brother practitioner has a hobby, of which you do not approve, let him ride it and protect him in his rashness—you may have a worse one and need his good offices more. Protect his personal and professional reputation so far as in you lies.

If we have that charity and sympathy for each other which we should have, I am sure we will have very little need to come in contact with the question of dental jurisprudence. Let us "write the faults of our brothers on the sands and their virtues upon the tables of love and memory."

ORAL PROPHYLAXIS.*

BY J. V. CONZETT, D. D. S., DUBUQUE, IOWA.

Mr. President, Members of the Chicago Odontographic Society, Ladies and Gentlemen:

When your committee asked me to read a paper before your society upon the subject of Oral Prophylaxis, I immediately and willingly accepted the invitation. Not because I felt that I had anything that would be of special interest to this society or the profession, but because I felt that prophylaxis is the most important subject before the profession at this time, and I believe that this society is one of the most, if not the most, scientific organizations in the profession and contains among its membership the men best able to discuss a paper and perfect, if that is at all possible, a method of treatment that will be of incalcuable benefit to humanity. Because I am personally very much interested in oral prophylaxis and eager to obtain any light upon the subject, and because I feel that the discussion which the mere presentation of the subject before this body of scientific men will call forth, will be most helpful to me, is the excuse for my presence in this capacity tonight.

I said that I believed that prophylaxis is the most important subject before the profession at this time. If an ounce of prevention is better than a pound of cure, and who will deny it, then prophylaxis, if it does prevent, is proportionately better than operative or prosthetic dentistry, in that it will prevent the ills which it is their province to alleviate or repair. If it does prevent! Is there any method or are there any methods that are preventative of the diseases with which we have to contend in the human oral cavity?

In order to intelligently discuss that question we must know something, at least, of the etiology of the diseases under consideration. The two great diseases which we have to combat are caries of the teeth and so-called pyorrhea alveolaris. It will be necessary to discuss them separately. Ever since dentistry has been a profession there has been a difference of opinion concerning the etiology of caries of the teeth. Until the past few years it was universally supposed that caries was caused by some inherent weakness or defect in the teeth themselves and that because of this internal weakness they were subject to inflammation, necrotic conditions of dentine and enamel and the entire train of symptoms manifested in a carious tooth.

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*Read before the Chicago-Odontographic Society, October, 1907.

It will not be possible nor is it necessary to go into the history of the evolution of thought in regard to caries of the teeth, suffice it to say that thanks to the labors of Miller, of lamented memory, Williams and our own grand old man of dentistry, Black, nearly all believe that the cause of caries of the teeth has been demonstrated and that it is not due to any inherent weakness or defect in the tooth structure, per se, but that it is due to a micro-organic invasion of the dental tissues from without. However, there are some that do not yet accept that theory. Dr. Bromell in the November *Cosmos,* of 1896, claimed that it was not so much the environment of the teeth as the inherent weakness of the tooth itself that made caries possible, and the writer of the articles in the DENTAL REVIEW that are signed "Borroughs" in reporting a paper read by the author before the Second District Dental Society of New York, criticised my attitutde in attributing caries to outside influences and not taking into account the physical weakness of the tooth. So it may be well to know whereof we speak. For if the cause of caries is to be found in the inherent weakness of the tooth, from whatever cause, then the attempt to prevent caries must be approached from another direction than that we would take if we knew that caries is caused by a micro-organic invasion from without. Dr. Black, in the *Cosmos* of 1891, demonstrated the fact that the dentine in all teeth was practically the same, so accepting his work, as I think we must, we know that caries is not caused by any internal defect in the tooth structure. But Dr. Trueman pointed out the fact that as the enamel is the protecting organ of the tooth, and as decay of the dentine never takes place until this coat of mail is penetrated, it is not the dentine that is concerned in primary decay. Rather must we look for a defective structure in the enamel. In order to answer this objection, Dr. Williams, in a contribution to the *Cosmos* in 1897, showed that the enamel in all the cases that he examined was practically the same; furthermore, that the enamel in races of men that were nearly immune to caries, was just as defective as was that of the enamel of the tooth-from a mouth that was extremely susceptible, and on comparing the enamel from the teeth of animals that were wholly immune, he found that in many cases the enamel was very defective indeed, and yet there was no caries. Again he demonstrated the beginning of caries upon the surface of a tooth that had a defective spot in the enamel, but the carious part was not at the break in the enamel but upon a sound portion of the enamel, while the defective spot was perfectly free, demonstrating conclusively that caries was not caused by defective tooth structure.

It is not possible to go into the entire subject of the etiology of caries. We must refer those not fully convinced to the great work of Miller on the "Micro-organisms of the Human Mouth"; Black on the "Physical Characteristics of the Human Teeth," and Williams' "Study of the Enamel." Suffice it to say at this time that it has been demonstrated that the cause of caries of the teeth is an acid producing organism that attaching itself to a portion of the surface of the tooth that is protected from the tooth brush and the excursions of the food in mastication, there, by its life processes, produces an acid that attacks the tooth tissue and causes its disintegration or caries.

Just why it is that these organisms will attack the teeth of one individual and not another, or why the same individual is susceptible at one time and immune at another, when the same organisms may be demonstrated in his mouth, is at present not apparent. There is no doubt in my mind that the cause must lie in some condition of the oral fluids or the vital processes of the individual. In expressing this belief I do so despite the fact that I am familiar with the work of Miller in his chemical analysis of the saliva of susceptibles and immunes and finding no chemical difference, and his bacteriological studies upon the same subjects with the same findings; I am also familiar with his hypothesus of symbiosis, but while this may explain the present status of the individual in regard to caries, it pushes the problem a little farther back, for we may ask the question why do the non-pathogenic bacteria predominate at times of immunity and the pathogenic at times of susceptibility?

To my mind the only answer must be in some yet undiscovered substance in the saliva or some form of vital resistance. The question of food may, and I believe does, play an important part in this problem. For Miller has told us that some bacteria that normally are alkaline producing bacteria, become acid producers upon the addition of a certain amount of sugar to the food. But this does not explain the difficulty entirely, for we will note the change from susceptibility to immunity and vice versa, while the diet of the individual is exactly the same, as near as we can determine. If this problem is ever solved we may be able to reach a true prophylaxis in caries, but in the meantime we know that the cause of caries is a micro-organic invasion of acid producing micro-organisms upon, and subsequently into, the dental tissues. If we could prevent this invasion we would have no decay. Can it be done? While I do not think that we can absolutely prevent decay, we can do so much toward it that it will more than repay us to make the effort. For, to again quote Miller, "The more thoroughly we can prevent the growth of bacteria the more we shall be able to limit the ravages of decay." We cannot keep the mouth surgically clean for any length of time, it is true, but we know that decay cannot take place until the organisms have attached themselves to some protected portion of the tooth surface and then protecting themselves by a gelatinous covering, as taught us by Williams and Black, they begin their destructive work. It must necessarily take some time for the organisms to attach themselves and a further time for them to make any progress in their work of destruction. So if we are able in any way to either prevent their lodgement or to displace them before they have done any damage, we have accomplished our purpose.

In the past all attempts to prevent their initial lodging upon protected surfaces by the use of antiseptic washes, tooth powders, etc., have been failures. In spite of the best care the patient might give to his teeth, caries would persist. But by the system of prophylaxis as elaborated by Dr. D. D. Smith, in which the patient presents himself at frequent intervals to his dentist and all of the surfaces of the teeth are carefully and thoroughly cleaned, the bacterial placques that have succeeded in establishing themselves are removed and the teeth are so polished that it is difficult for them to again gain a foothold. I believe that this method is theoretically correct and those of us that have been putting it into practice know that it does produce results. I shall speak of the technique later, for it is practically the same in the prevention of both caries and pyorrhea.

The etiology in pyorrhea is still a debated question. Some authorities would have us believe that the cause is to be found entirely in some systemic disturbances, others that it is entirely of local origin and others that it is a local manifestation of a systemic disturbance. With the latter proposition I entirely agree, although I do not believe that it is the result of any specific systemic disease or perverted function. We know that there are certain organs whose duty it is to eliminate waste products from the organism. We also know that if any one of these organs becomes diseased or does not properly functionate that the burden of its work is taken up by the other eliminating organs. For instance, if the bowels fail to properly perform their function, the kidneys, skin and lungs attempt to take up and throw off the waste products that are not eliminated by the bowels. In proof of which we find indican in the urine and have the feted breath and foul perspiration of chronic constipation. The same is true of the other organs. In life there is a division of labor and an attempt at compensation between the various organs, Dr. Black in his paper on "Pyorrhea" in the American System of Dentistry, speaks of the gingival organ, which he says seems to have some of the characters of a gland, but is not of glandular structure. Dr. Talbot denies this and fails to find any evidence of such organ, which may be explained by the fact, as Black points out, that this bunch of cells does not generally run clear around the neck of the tooth. "Often it is confined to the proximal surfaces and those cutting labio-lingual sections may not find it at all." Dr. F. B. Noyes evidently did find it and gives us a beautiful micro-photograph of the so-called gingival organ in his article in the American Text Book of Operative Dentistry. Personally I am not histologist enough to affirm or deny the correctness or falsity of the findings of any of these eminent men. But from clinical experience I must believe that there is some structure in the gingival region that partakes of glandular function. For in certain drug poisoning, such as mercury and iodide of potassium, we have a decided gingivitas, due to the fact that the poison is eliminated, as is supposed, by the gingivæ, or as I take it, by the gingival organ. Dr. Patterson denies this and says that he has been able to cure mercurial gingivitis by merely cleansing the gingival border and keeping it clean. He says that the reason that we have a gingivitis in mercurial or other drug poisoning is because of a failure to keep the parts clean. But while his results may be correct, and I believe are, that is, I believe that gingivitis may be prevented or even cured after having been set up in drug poisoning, by a careful and frequent cleansing of the tooth under the free margin of the gum, I do not believe that his deductions are correct. The fact is, I believe that the very results that he obtains is proof positive that the drug is eliminated under the gum margin. For it is not the elimination of the drug that causes the gingivitis, but the fact that owing to the peculiar stiuation of these glands, when the drug is eliminated by them it is not thrown out or washed away, but stays in contact with the gingival tissues at or near the point of elimination and by its continued presence sets up an inflammation which soon becomes very violent in many cases. Now, if nature is assisted at this time by a frequent cleansing of these margins, the products of elimination will be washed away; there will be no irritation and consequently no gingivitis.

I believe that something analogous to this phenomena takes place in pyorrhea. We have first a systemic disturbance of some kind. It may be, and I believe very often is, a digestive disturbance. It may be a disarrangement of the kidneys. It may appear as a result of plumonary tuberculosis or as a result of the partial loss or impairment of function of any of the eliminative organs, as a result of which certain products of a faulty metabolism are eliminated by the gingival organ, or by structures analogous thereto in the gingival region. As a result of the retention of the products around the gingival margin, we have an irritation succeeded by an inflammation which inturn causes an extravasation of serum and the result is the serumal calculus of pyorrhea.

Whether this is the correct theory or not, we know that it is impossible to cure pyorrhea without thoroughly removing the deposits under the gum. All the drugs that have ever been invented are absolutely useless in curing pyorrhea, when taken internally without the removal of the calculus.

On the other hand, every man that has had any experience in the treatment of pyorrhea knows that the mere removing of all of the deposits and keeping them off will cure the disease without the use of any internal medication. Therefore, if the removal of the deposits will cure the condition, the prevention of the formation of the deposits in the first place would seem to be the rational way of preventing the disease. And it is. In the past the profession has been all too lax in recognizing the beginnings of gingivitis, and not until the patient presented himself for treatment, because of a condition that was apparent to him, was any attention paid to the condition of the gingivæ, and then too frequently he was told that he had pyorrhea and that it was incurable. Patient after patient has come to me from other men and when attention was called to a decided gingivitis and treatment urged and the consequence made plain, have expressed the greatest surprise and have said that no other man has ever said anything about it to them. And again patients come to me telling me that they have been told that their condition was past help, when one or two treatments were all that was necessary to place the tissues in good condition.

How can the diseases of the oral cavity be prevented? By absolute cleanliness. Yes, but you say absolute cleanliness is an impossibility. Well then, in proportion as we keep the teeth clean above the gums and below the free margin thereof, will we be successful. This can be accomplished in a very large degree by the co-operation of patient and dentist. Neither can do it alone. The work of the dentist must be supplemented by the care of the patient. The patient should present himself once a month to the dentist for treatment, and the treatment should consist of a thorough cleansing of all the surfaces of the teeth above the gums and below their free margin. In beginning the operation, the mouth should be thoroughly washed out with some warm antiseptic solution, then with suitable scalers all of the calculus or debris should be thoroughly removed from below the free margin of the gums. Care should be taken not to wound the soft tissues not to encroach unduly upon the peri-dental membrane, and yet the pocket, if there be one, must be explored to its depth and all of the contained calculus removed. This may take several sittings, if there is any considerable degree of deposit. But to get results must be thoroughly accomplished. Any scalers that produce results may be used. Personally I use and like very much the set of prophylactic instruments devised by Dr. Smith. During the scaling of the teeth the parts should be freely deluged with an antiseptic wash from a syringe. It is best to use one that will give considerable force to the stream so that the particles may be thoroughly washed out. After the scaling is completed the teeth should be thoroughly polished. For if not polished the rough surfaces left by the scalers will present an ideal condition for the formation of fresh deposits. This polishing is best accomplished by using an orange wood stick, whittled to the proper size, charged with powdered pumice and used in a porte polisher of design similar to the one furnished in the Smith set. It takes some time and patience to acquire the requisite skill to properly use this instrument. But once obtained its benefit is great. The parts needing attention most are those most frequently neglected. The gingival portions of the teeth under the free margin of the gum should receive the greatest attention. There we will find upon the application of our stick a greasy deposit, which will cause our instrument to slide over the tooth, but the place should never be left until that greasy feeling is entirely removed, for the place is not clean until it is. A little practice will soon teach one to recognize and overcome these conditions. All of the proximal surfaces of the teeth need the most careful attention. This can partially be done with the stick but it is good practice to supplement the stick with a floss silk charged with the powdered pumice and thus briskly polish these surfaces. The ordinary dental floss may be used, doubled several times, but it is far more convenient to use a floss silk made especially for this purpose. Such an one is the ribbon floss prepared by the Cutter Silk Company. Dr. Smith says never use a brush or wheel of any variety in the engine. Depend entirely upon the stick. Personally I can see no harm in polishing the coronal surfaces of the teeth with a brush wheel if care is used to prevent the injuring of the gingival tissues therewith, and I frequently follow the stick and ribbon floss with the brush wheel used upon the coronal surfaces and I think to good effect. After this is all done I use an antiseptic spray under a pressure of thirty pounds, and go all over the teeth, between them, and especially under the gum margin, to thoroughly wash out any debris that may be left or any of the pumice that may remain, for I believe that the small grains of pumice remaining under the gum margin would continue the irritation. The spray that I use is echefolta, 1 ounce; dioxygen, 5 ounces, and water, 4 ounces.

The patient is now instructed in the care of the teeth, frequent and proper brushing, not only of the teeth, but the gums as well, is enjoined, and the patient is dismissed until the time for the next treatment.

I said that this should be done every month. That is the ideal. In practice I find that it is somewhat difficult to carry out. But half a loaf is better than none, and if we cannot get our patients to come once a month, have them come once in three months or even once in six months. I find it a very good practice to obtain the consent of the patient, which is usually very gladly given, to have my assistant ring them up at the expiration of the prophylactic period and remind them of their engagement. If this is not done, in nine cases out of ten, it is overlooked and the patient does not come near until a carious tooth or twinge of pain reminds them of their neglect. In our office we keep a record of all patients that wish the prophylactic treatments and a day or two before their time they are notified of the fact.

I think that a decided distinction should be made between cleaning teeth and prophylaxis. I do not like the term "cleaning teeth." The fact is that a large majority of the men who clean teeth do not clean them at all. On a good many occasions I have had patients tell me that they were accustomed to having their teeth cleaned every six months, but after I had finished, had begged my pardon and have said that they never had their teeth cleaned before. There is no operation that requires more skill than prophylaxis; there is nothing that we do for our patients that accomplishes as much good as it does. It not only keeps the teeth and oral tissues in a state of good health, but I believe that it does vastly more than that. We know that the conditions that present in the oral cavity are ideal for the propagation of all kinds of migro-organisms both pathogenic and non-pathogenic. If the mouth is in a habitually unclean condition, reeking with all kinds of disease producing organisms is it not reasonable to suppose that upon the slightest let down in the physical condition of the individual, the organisms that he has been harboring in his mouth will invade the non-resisting tissues and produce disease? I think that it is not only reasonable but that it is a fact. Physicians and surgeons are awakening to the importance of oral cleanliness and I believe in proportion to their taking this great factor into consideration will be their success. Our patients are what we make them. If we merely fill teeth, pull teeth and make plates we will be looked upon as tooth carpenters, and rightly so. But if we demonstrate the fact that there is a higher art in dentistry than the reparative art—high as that has grown to be—and that that art has for its purpose not only the prevention of diseases of the teeth and their conservation, but above and beyond that, the prevention of disease to the whole organism, we shall take our rightful place in their estimation and shall walk side by side with our brothers in the other branches of the healing art.

The great reason that this subject has been neglected in the hands of the average man is a financial one. It has grown to be a habit with some men to throw in the cleaning of the teeth, or the price is $1.00. No man can afford to spend the time necessary to put a set of teeth in a hygienic condition for any such sum as that; the consequence is that it has been neglected. The remedy is educate your patients to a proper appreciation of the necessity for the work and then charge for your time. I make half hour engagements for prophylaxis and if one hour is not sufficient make another appointment. In some cases it is necessary to have eight or ten such appointments, but in the end you will find that you have obtained better results than you could have done at one sitting of long duration. Your patient has not been hurt so much and moreover is more willing to pay the proper fee. If this plan is followed I am very sure that you will all find as I have done, that it will increase your business, will be more satisfactory to yourselves and patients, but above all things it will be of the greatest benefit to the oral and systemic health of your patients.

LITERATURE.

Miller.—"Micro Organisms of the Human Mouth."

Black.—"Physical Characteristics of the Human Teeth."

Miller.—"Symbiosis, with Particular Reference to the Bacteria of the Alimentary Canal."

Black.—"Diseases of the Peridental Membrane."

Black.—"Dental Caries."

Smith.—"Dental Prophylaxis."

Noyes.—"Dental Histology with Reference to Operative Dentistry."

Talbot.—"Interstitial Gingivitis."

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT ROME, MARCH, 1907.

DISCUSSION OF DR. DAY'S PAPER, "LEAD POINTS IN THE TREATMENT OF ALVEOLAR ABSCESS."

Dr. W. A. Spring

Said the society had reason to be grateful to any one who presented a new idea or an idea which would be of aid in the treatment of root canals. Nothing presented so many difficulties as that treatment. Dr. Day had kindly sent him a few of the lead points and he had tried them in one case to his satisfaction. It was a case which he had not completely cured; there was a certain amount of swelling about the end of the root. The point was inserted with fear and trembling, but the case had never given any trouble and the swelling had disappeared. It seemed to him, however, that it had not been made clear as to what should be done in case the operation did not prove successful. It looked very much from the description in the paper as if the operator had burned his boats behind him, as if the point, once malleted into position, would be so firmly placed that it could not be got out. He wished, therefore, to know what would be done in case the operation did not prove successful, and also to know what would be done if, when trying the operation for the first time, the point should be made a little too small and should be malletted through? A few years ago much had been said of a method for treating fistulous openings by enlarging the opening in the end of the root and forcing a disinfectant through, pyrozone for example, followed by distilled water and then forcing in liquid gutta percha, and later on gutta percha points. That method never appealed to him, and it seemed to him that Dr. Day's method was decidedly a more accurate one, because if the opening was very large and the gutta percha later on shrank there would be danger of a space at the end of the root. He also wished to know whether Dr. Day would use such a lead point in a case where the end of the root had been cut off and a comparatively stumpy end was left. Also whether he had become so attached to the method that he would consider it an advantage actually to open a root in order to secure an opportunity to apply the method. Also whether he had never used a lead point or piece of lead to stop up the perforation sometimes discovered in the side of a root. As he read the paper, Dr. Day risked putting in the points in cases where he had not yet quite secured comfort, knowing from his experience that the ragged edge of the end of the root would be relieved by the point fitting it so well. It seemed a risky thing to do in such a radical operation, especially when there was the difficulty of removing the lead point in case of after trouble.

Dr. Field Robinson

Also congratulated the author on the paper. He thought it a coincidence that men living in different parts of the world should carry out the same idea almost at the same time. In 1904 Dr. John Spaulding of Paris read a paper at Basle on the very same subject, in which paper he not only brought forward the question of the treatment of roots for chronic alveolar abscesses but also for perforations; in fact, Dr. Spaulding's first real success in the use of lead was for perforations. Afterwards he used it for the final treatment of the apex of the roots. Some time ago he himself was very troubled with the difficulties he encountered in treating a chronic abscess on a right upper lateral and Dr. Spaulding told him that he had been doing that kind of work almost since 1874 and had had a constant series of successes, particularly where they were perforations. The society was indebted to Dr. Day for the encouragement he gave on the question of pushing the wire through the end of the root. It was consoling for those who had no authority to hear a man who had thoroughly gone into the subject, saying that there was an advantage in the little piece of lead going through the foramen.

Dr. L. J. Mitchell

Said that when he first came to London in 1889 he saw a number of cases Dr. Elliott had treated in the same way and he believed Dr. Elliott's method of treatment was recorded in the minutes of the society. He thought it was a very good thing Dr. Day had brought it forward, because it was a very great assistance. Dr. Elliott also used copper points in roots, and employed copper instead of other medicaments in the canals previous to closing them up, not as a filling material. He had seen a number of cases where the roots had been sealed by lead plugs put in before 1889. Dr. Elliott retired from practice in 1890. It was well known that lead was tolerated in the tissues, especially in proximity to osseous structure. In lower and upper molars, where caries had progressed below the bifurcation, and the soft tissue was exposed, lead burnished over them before a filling was put in answered admirably and it was very seldom that discomfort or trouble followed cases treated in that way. He saw no difficulty in removing the lead points, especially if the points were left sufficiently long to take hold of, and he had removed a few himself. With regard to the crown, he had seen this very case about twelve or fourteen years ago. As the time it was in perfect condition, and a credit to the man who had put it on. The fact that stamped the deed on the memory of the patient was that she was brought up to town at that time to see an exhibition held in Hyde Park.

DR. DAY

Said he was glad to hear Dr. Mitchell confirm the case. The patient was absolutely certain it took place in May, 1851.

DR. MITCHELL

Said it was a very neat case and the society was indebted to Dr. Day for bringing the crown forward. With regard to lead points, up to the present time nothing better had been found in the treatment of cases for which they were indicated.

DR. DAY,

In reply, said in the paper he had described the method as new to him, but he was very pleased to hear it was not so to everybody present. He had done about twenty-three cases, and the cases he had mentioned were not experimental ones. When asked to read the paper he wrote to several cases but found the patients unwilling to help him for demonstration purposes. With regard to burning one's boats behind one, he himself was not a bit nervous, but if anybody was doubtful about the treatment he recommended that they should leave in the full length of the pin. Out of the twenty-three cases he had operated upon he had never had one case of recurrence. It might not be sufficient to give a percentage, but it was a good indication. If the operation was successful, one took hold of the lead wire with a pair of pliers, twisted off the nicked portion or point, and pulled off the stem. In some cases he left the whole length of the pin in, relying on a band for the retention of a crown or pivot where he could not do it the other way. He always treated the abscess first until he had a healthy serous discharge, and if there was a little blood so much the better. He would rather put up an instrument and make it bleed first, and would even fill on a flow of blood. He had never malleted a point through. If he did so, he would rather have a lead point through the end of a root that cotton or iodoform. He thought a lead point was much more healthy. It is known that the end of the lead is absorbed into the body. The expert to whom he took the cases to be x-rayed told him that they were conducting experiments with regard to the absorption of lead in the body and there was no question that it was gradually absorbed. He did not think it could be absorbed while it was in the root, but the end might be, and become rounded off. A little bit of lead more or less in the body did not amount to very much. He had tried the method in cases where he had amputated the roots and he had met with just as much success. One of the cases he had described was at the side of a root. The root was certainly curved and that was the reason the point appeared to be forward. It was a curved bicuspid root, and in opening it he might have gone through it himself. He had used the method of burnishing lead against the side of roots; it secured comfort and rendered the tooth healthy before the point was put in. He thanked Dr. Robinson for the information with regard to Dr. Spaulding having used the method. When he was with Dr. Spaulding he was aware that he used lead to burnish over roots that were decayed through the bifurcation, and that he put a gold band round the roots and filled amalgam on the top, but he did not know he used lead in roots, although he was with him ten years ago. He did not claim to be the inventor, although it was new to him, and there was no literature on the subject. He wrote to the S. S. White Company and asked them to look the matter up and he received a letter from them in which they said:

"We do not find any reference to the subject in the current literature," and to the Dental Manufacturing Company with a similar result. Filling root canals with lead points had been known for twenty years, but it was the point of perforation through the end of the root that he wished to demonstrate. If Dr. Spaulding and Dr. Elliott did the work so far back, they had never said anything about it as far as he was aware, and he could not find any record of it. The S. S. White Company said:

"With regard to filling roots with little lead points, we have to say that we do not find any reference to the subject in current literature; in fact, we know that those points have been generally, if not entirely, discarded by American dentists."

DR. GEORGE NORTHCROFT

Said that referred to current literature only.

DR. DAY

Agreed, but said he had tried to look it up himself, but could find nothing. He quite agreed with Dr. Mitchell that it was quite easy to remove the points.

DISCUSSION OF DR. SOLBRIG'S PAPER, "CASTING GOLD INLAYS."

DR. J. W. GALE

Thought the paper was the most ingenious that had come before the society since he had become a member. To discuss it seemed almost an impossibility and in a way almost unnecessary, because Dr. Solbrig was to demonstrate his method at the clinic. Last year the members had had an opportunity of seeing Dr. Sach's very interesting clinic on the casting of solid gold bridges, which was done exactly in the same manner. The method under discussion appealed more to the artistic sense than the casting of such solid masses as plates and bridges; the artistic effect Dr. Solbrig had produced in the specimens passed round certainly compared very favorably with the earlier method of filling in a matrix or swaging the matrix in the usual manner that gold inlays had been made.

MR. HARTLEY

Differed a little from the author in the method of making cast inlays. In very complicated cases he took an impression and made the matrix from a model, and then went on with the method suggested by Dr. Solbrig. The method of making the solid cast crown was an excellent one and very easily accomplished, and the results were very gratifying indeed.

DR. FIELD ROBINSON

Said that last December Dr. Hartley gave a demonstration in Paris of his method of making gold inlays, and from that time there had been a most interesting series of improvements, the personal ingenuity of each operator combined with those of his colleagues bringing forth some excellent results. At that time Dr. Solbrig had already brought forward several of his methods of making solid gold inlays, which were not precisely the same as those presented that day. Dr. Bert also brought forward his plan, which involved a piece of soapstone, forming a special kind of receptacle for the gold. Dr. William Davenport also presented some most exquisite work in solid gold bridges. In fact, during the last few months the little dental society of Paris had been full of solid gold inlays and solid bridges, and the work increased in value every month.

DR. SOLBRIG

In reply counselled the members to try the method themselves, as had been done in Paris with very great success. There were perhaps a few little points that might crop up during the experimentation, and the method might be still improved upon, which was a thing he greatly desired to see.

DR. KIRK DAVENPORT

Exhibited a pair of models sent to Professor Miller by Dr. Bonnell of London, who wrote: "Patient aged about thirty-nine, none too fond of toothbrush. Had not seen any dentist between early in 1882 and late in 1896." The case was one of erosion and the question simply was whether it was mechanical or chemical.

THE PRESIDENT

Then in the name of the society thanked the readers of papers and those who had contributed to the dicussion. He especially thanked the visitors, to whom the thanks of the society were due, for no less than four out of the eleven papers read at the gathering. He therefore moved: "That the cordial thanks of the members of the A. D. S. E. be accorded to Doctors Solbrig, Law, Fisher, and Chiavaro for their contributions to the program of the meeting in Rome in 1907." In making that motion he did so with all the greater pleasure in that those gentlemen were by no means strangers to the meetings—he might say were "visitors" only in name.

DR. A. H. CHAMBERLAIN

Seconded the motion, which was carried with acclamation.

The meeting then terminated.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting of the Chicago-Odontographic Society was held in the Library Building, Chicago, Ill., on Tuesday evening, October 15, 1907, at 7:45 p. m.

Dr. F. E. Roach, the President of the society, occupied the chair.

Dr. J. V. Conzett, of Dubuque, Iowa, read a paper entitled "Oral Prophylaxis."

DISCUSSION.

DR. C. E. MEERHOFF:

Mr. President, Ladies and Gentlemen: There is much food for thought in this very excellent paper, and I am glad to have had the opportunity to study its contents. It affords me much pleasure to have a paper presented to this society upon such a live subject, and I know that now the members will have an incentive to the adoption of a practice in keeping with the progress they display in all other branches of the practice of our profession.

Whether we accept oral prophylaxis only as a curative or palliative measure in caries or pyorrhea, as seems to be the opinion of the essayist, it is worth while—but the limitations for the practice are almost without bounds.

Whatever theory we accept as to the cause of caries, in my opinion the common sense statement that an accumulation of filth favors the progress of caries will be accepted generally, and so for the sake of the discussion of this topic the etiology of caries and pyorrhea might almost be eliminated. Each one of us has probably formed an opinion, and the literature upon the subject gives us nothing conclusive. I thoroughly agree with the essayist when he says of pyorrhea that if the removal of the deposits will cure the condition, the prevention of the formation of deposits in the first place would seem to be a rational way of preventing the disease, and to my mind the high degree of polish which may be obtained by hand with orange wood and pumice is our only way of preventing this accumulation.

Aside from the study and treatment of the two conditions just named, the true advocate of prophylaxis must needs observe all conditions present in the mouth; in fine, remove so far as is possible every faulty condition which might give rise to a gingivitis at any point. In so doing he may be obliged to remove a badly adjusted banded crown, polish a filling here or there, or perhaps condemn a poorly fitting partial plate. To get results all irritants must be removed, after which the practice as outlined by the essayist, if assiduously performed, will produce an effect little dreamed of by those of you who have not made this a practice.

This method is so far removed from the stereotyped "cleaning the teeth" to cause me to recite an incident of office practice. A young man of 28 consulted me recently regarding a foul breath, with which he had been troubled for some time. He stated to me that his dentist (a reputable man) had "cleaned his teeth" every thirty days during the past two years. Four hours of time have been necessary to remove the hard and soft deposits, and this regular "cleaning" to which he had submitted had not served to disclose to his dentist an amalgam filling connecting a bicuspid and molar, which space had never been cleaned since the introduction of those fillings.

This case is one of the class commonly met and which after four or five treatments will develop into what is practically a normal mouth. He had his "teeth cleaned" one month ago, and in spite of his own application it has required four hours to remove matter which probably could not have accumulated in six months after a proper prophylactic treatment.

As the essayist observed, the one great objection most frequently advanced is that of fees. Patients should be advised where a change in method is contemplated, and the operator should fix a charge in keeping with that made by him for any other operation, and the benefit to his patient is greater—if for no other reason than that it embraces a larger field.

A word now as to the duty of the patient. He should be instructed that four or five brisk movements with the brush on each side of the mouth does not constitute a brushing of the teeth. Instruct your patient to devote a minute and a half of close application to the task, and in a short time he will show you a changed condition. Instruct him in the use of floss—how to touch upon all surfaces which are not reached thoroughly with the brush, and convince him that the contact of the brush with the gum tissue is not a detriment, but a benefit, and that that tissue, if normal, rarely bleeds unless injured.

In closing, I wish to pay my tribute to Dr. Smith. I thought I knew how to obtain a reasonably sanitary condition of the mouth, but after paying him a visit I was convinced I knew nothing about it. The examination of his patients revealed conditions I did not realize possible and left me in such a condition of wonderment and surprise—each one more remarkable than the former, if that were possible—that the recollection of it will always be a guide to me in my work along this line.

I wish to thank the essayist for the introduction of this subject to our society, and trust that the progressive spirit of the west will convince all of our members of the sound sense of oral prophylaxis.

Dr. Lester F. Bryant:

I have listened to this paper with a great deal of interest and pleasure, as I consider this a most important subject. It would be impossible for me to attempt to criticise the paper, as I so heartily agree with everything the essayist has said. I should like to impress those present with the benefit of a good systematic phophylactic treatment, and by that I do not mean the number of times you see your patient, that I leave for your own discretion, but the systematic manner you polish every surface of the teeth, giving the proximal and cervical region special care. I look back with shame to the time when I used to just clean teeth, and think of the cavities I have allowed to develop, and the cervical fillings that I have inserted, that never should have been inserted. If those cases had been handled as they should have been the teeth would be as sound and glistening today as the day they were erupted.

One of the greatest proofs of the benefits of this treatment is as the essayist has said, in drug poisoning. Our best syphilographers are beginning to recognize the fact that they can push mercury or iodide of potassium farther if the patient is under a rigid prophylactic treatment, with little or no gingivitis ensuing. Again in cases where the general condition is run down the different organs not functionating properly, and the processes of digestion not taking place as they should, acidulated gases emenate from the stomach and are deposited over the teeth and mucous membranes, making the mucoid deposits under the free margin of the gums more strongly acid in reaction, and a better medium for the propagation of pathogenic organisms. I have noticed in patients who have been confined to a hospital, that the tissues of the mouth are in very bad condition. I have in mind a case of a young lady who had one of the finest sets of teeth ever intrusted to my care. While at school last winter she was taken down with appendicitis, and operated on. Complications arose and she was in the hospital for considerable time. When she reported to me for treatment her mouth was in a lamentable condition, all that beautiful luster of the teeth gone and gingival festoons broken and irregular, and a white chalky appearance around the cervix of each tooth. I have seen the patient five times since her return. All recession of the gums has stopped, no more bleeding, and the teeth are changing in appearance. I believe in time all traces of the white lines at the cervix will disappear.

DR. MAWHINNEY:

I want to congratulate the Society on the paper that has been read tonight and on the judgment of the program committee in providing such an essayist. I compliment the author upon the excellent way in which he has presented the subject.

The subject of oral prophylaxis I have given a great deal of thought, and it is a subject that is receiving much attention from all quarters of the country. I have not had the pleasure of witnessing operations by Dr. D. D. Smith, but I have heard so much of him as well as read his articles, that I have a pretty good idea of what he is accomplishing along this line. Judging from current literature, I feel that a great many men are getting the idea that oral prophylaxis is a sort of system of manicuring the teeth. It seems sometimes that this word prophylaxis is being juggled with a good deal, and that many who think they are accomplishing the work and following the precepts of D. D. Smith and others, are simply manicuring the teeth. I heartily agree with every statement contained in the essay so far as the main subject of the essay is concerned.

There are a few things about it that I do not agree with however, but I am not going to take time now to discuss them, because they do not relate directly to the subject, further than to say this: All cases of pyorrhea do not get well when you clean the teeth. There is something necessary besides cleaning the teeth in order to cure so-called pyorrhea as it occurs in many cases.

I want to throw out a word of caution on this subject of prophylactic treatment of the teeth, and that relates to the danger of destroying the normal function of the so-called gingival organ. I wonder if we all realize when we get to scraping around the necks of teeth that the most important point of attachment of the peridental membrane is the exact gingival margin, the first few fibers which unite the teeth to the gum tissue. I wonder if we realize that the moment we destroy the first few fibers that we are making a place for the lodgment of mucous secretions and the beginning of pyorrhea. I have stood by and watched men using scalers to clean the necks of the teeth, and at the same time they were looking all around the room, and the blood was running freely from gums in which there was no inflammation at all. I tell you, gentlemen, the more I observe these cases and study them carefully, the more cautious I am about injuring this gingival attachment of the gum to the teeth.

You know that the first few fibers unite the gum tissue to the periosteum, peridental membrane and alveolar border in one solid mat, and the moment you cut those fibers or scrape them out of their attachment, or injure them in any way, you have ruined the gum margin for all time. I do not care if you cut them in the process of fitting the band for a crown or how you have done it, you have the beginning of a so-called pyorrhea in that mouth. I have many patients where the beginning of this trouble is easily traceable to a separator that was used to gain space for making fillings, and the teeth were so rapidly wedged away that the peridental membrane was torn at that point or partially torn, and in the process of trimming the margins of the filling the membrane was further destroyed. I do not care how perfect your contact is, you have the beginning of a pyorrhea at that point. It does not matter whether calculus is afterward deposited in the place or not; many times it is and many times it is not. I see many cases of pyorrhea in which I cannot find any calculus at all, even with a magnifying glass. I have some queer opinions about this point that are only half hatched. If they are ever fully hatched, I will tell you what they are.

However, that is off the question. The point I want to make is that in polishing the tooth neck with an orange wood stick and the like, there is danger. As done by D. D. Smith or the essayist or Dr. Meerhoff or a lot of others, there is no danger, but the craze is being taken up and it will take some training to enable the average man to do it without doing irreparable damage to the tissues involved.

So far as caries of the teeth is concerned, if they are kept perfectly clean I know there would not be any caries. I am sure if my patients would come to my office often enough and allow me to polish the coronal surface of the teeth, I could keep them from decaying. I have a number of cases where decay ran wild, and I have been able to hold the decay in check by this treatment. It is difficult to get people to appreciate the importance of the matter and to follow it out, but you will be surprised at the number that will readily take up with the idea. I sometimes think it is largely our own fault if people do not take hold of it because it is surprising to see the number of people who will do so at the simple suggestion to them that it would be well for them to have their teeth polished every four or eight weeks. They are glad to fall in with the idea. Many men that I have never thought would feel that they could spare the time, such as bankers and other busy men, are glad to be called up regularly, and they will come and devote the necessary half hour's time in order to have it done. I know that as time goes on they appreciate it more and more for it keeps their mouths in a condition which they little dreamed of before.

I do not regard simply polishing and keeping the teeth clean as the all important thing in oral prophylaxis. Dr. Black called my attention to a fact probably ten years ago, and has referred to it hundreds of times since, the great importance of keeping the soft tissues clean. You would be surprised to see how much filth will accumulate on an apparently healthy mucous surface. You would be astonished if you would take the proper kind of scraper, and drag it over an apparently clean tongue, and see what you will get off of it. Take it over the hard palate even, and see what you will get. Oral prophylaxis also relates to the keeping of the soft tissues in a healthy state by proper cleansing, manipulation, massage and the like, so as to keep the tissues firm, and the outer layer of mucous membrane clean and healthy.

So far as the prevention of pyorrhea alveolaris by the keeping of the teeth clean is concerned, there is no question but that it has a very important bearing on the subject, but it is not true that you can prevent pyorrhea absolutely by simply keeping the teeth clean. I believe that I have had many cases of pyorrhea where the inception was not traceable to dirty teeth.

I don't want you to get the idea that prophylaxis is going to be preventive of all diseases of the oral cavity. Cleanliness will help anything, I don't care what it is, and somebody has said that cleanliness is next to godliness. Somebody else has said, "I don't see how you can be Godly unless you are clean." I think that is true, but there are people, no matter how well polished their teeth may be in whom you cannot prevent certain diseases.

Dr. C. N. Johnson:

Most of these questions have at least two sides, and I think this question has more than two. I have been greatly pleased with the presentation of this matter by Dr. Conzett tonight, and I feel that the Society is under obligations to him for coming here and giving us this dissertation. It seems to me to be one of the best presentations of the subject that I have ever heard or read.

I want to say one word in addition to what Dr. MaWhinney has said, along a different line, in regard to the evils that may arise from too much advocacy of this method to patients unless certain cautions are given them, as to the care which they should give their teeth. Mr. President, I have more trouble with certain patients as the result of excessive use of the tooth brush than from neglect of it. I say that advisedly, and I want to tell you why. The majority of people today who come into our offices are very faithful in the use of the tooth brush, and by reason of the fact that their efforts have not been properly directed they are doing more injury than benefit to their teeth, not that I taboo the use of the tooth brush by any means. I think it is necessary. I think our prophylactic treatment is badly needed at this time, but our patients, by injudicious use of the tooth brush, are forcing the gum tissue away from the necks of the teeth, and past the enamel, and then cutting into the cementum. My plea tonight is that in advocating the tooth brush we have a care that we instruct the patients as to the proper use of it. If you observe the mouths of your patients you will find that frequently the individual who uses the tooth brush with a cross motion with the right hand will have the gum forced back from the labial surface of the upper left lateral incisor, cuspid, and sometimes the buccal surface of the bicuspid.

I believe we should encourage the practice of prophylaxis, but we must watch our patients so that injury is not done. I had a young lady in my office today who said she brushed her teeth five times a day, and the gum margins showed it. The gum was normal over the right bicuspid, cuspid, and lateral, but on the left side the gum was forced back past the enamel on these teeth. I said: "You brush your teeth with the right hand?" She said, "Yes." I took a mirror and showed her where she was doing the injury.

It is along these lines that we must educate our patients. I want to congratulate the essayist upon coming here and reading this paper. I think it will do a great deal of good, but I want to throw out just that one word of caution.

Dr. Thomas L. Gilmer:

I wish to express my appreciation of Dr. Conzett's paper. It is a clean cut presentation of the subject, which does not pretend to pervade the entire field, but what it does cover it covers thoroughly and well.

I was thinking today along the lines of the paper and wondering what view the Doctor would take of the subject. I felt sure that he would not recommend a lot of drugs for use in the mouth to prevent decay of the teeth. In this I was not mistaken. There is a widespread, and I am confident an erroneous idea prevalent among some dentists that decay of teeth may in a measure, be prevented by the use of antiseptics as mouth washes. This opinion is largely held by the laity, and it is a common thing to be asked, "What mouth wash do you recommend," and when the answer is given, "none," surprise is usually expressed, so firmly are the people impressed with the idea that decay of the teeth may be prevented and the entire mouth kept healthy by the use of medicaments. If the mouth is sick by all means recommend a mouth wash, but prescribe it with intelligence for the particular case in hand. If the mouth is in a healthy condition, then advise the use of mechanical means only for cleansing it. One would not recommend a well man to take a dose of calomel every night, neither should we recomment the use of medicine in the mouth every day if the mouth is in health. Germicides in the mouth in strength sufficient to be effective in preventing decay of teeth could not be tolerated by the mucosa. Even if they could be tolerated, before efficient work could be done, the secretions would so dilute them as to render the remedy inert.

Dr. Conzett said there are principally two diseases of the mouth which need the care of the dentist, viz.: decay of the teeth and pyorrhea alveolaris. Certainly these two diseases are the ones that are the most prevalent, however, I think a dentist makes a mistake if he stops short in his examination of the mouth if he does not look for disease in all parts of it. The mouth is our field and we are, in a measure, responsible to our patients for its condition. If we are as careful to examine all parts of the mouth as we are the teeth we will often save our patient much discomfort and possibly his life, by finding in its incipiency a lesion which primarily is benign, but which may become malignant in time. Today I saw a rare case which, had the real condition been recognized in time, might have been cured, but now the progress has been so great that it is doubtful if the patient's life can be saved. It is a case of tuberculosis of the buccal mucosa which has extended from the right cheek to the tongue, soft palate and floor of the mouth. The physician who referred the case to me thought it a case of ordinary stomatitis. It was such an unusual case, since it was unaccompanied by pulmonary involvment, that diagnosis was not arrived at until sections were examined which showed tubercular granuloma, and smears tubercle bacilli. This condition is similar to lupus, which as you know, is tuberculosis of the skin, and curable if taken in time by x-ray. Had this case been recognized in time I doubt not a cure could have been brought about by the same means.

As to pyorrhea, what is it? I am sure I do not know, however, I do not concur in the belief that it is of gouty origin since many gouty persons do not have it and many have pyorrhea who are in no sense gouty. Neither do I believe it to be the result of lack of cleanliness since the manifestly unclean mouths are often free from it and the cleanest mouths are sometimes infected with it. I cannot but believe it is a disease produced by specific bacteria and that it is transmitted from one mouth to another. If we have observed closely we must have often seen evidence of its contagiousness. It is almost universal that if a husband has pyorrhea the wife has it sooner or later and vice versa.

In regard to Dr. Johnson's remarks as to the over use of the tooth brush, I hardly agree with the Doctor that the teeth are very often over brushed. I should rather say in such cases as he referred to, that the patient is guilty of unintelligent brushing. I have seen just such cases as he called our attention to, and at the same time found other parts of the mouth woefully neglected. Did such a patient brush the teeth toward their occlusal or incisal portions then there would not have been the wear of the teeth spoken of and there would have been less of atrophy of the gum at the labial aspect of the teeth. Often the alignment of the upper posterior teeth is such that the second or third molar is not touched by the brush, when all other parts of the mouth are kept clean. It is our duty to call our patient's notice to these unbrushed teeth.

Dr. J. P. Buckley:

I dislike very much as chairman of the program committee to discuss this paper, but there is something that I want to say at this particular time. I am indeed proud of the fact that the program committee decided to have Dr. Conzett come here and read this paper, and I am also glad that we have had our pioneer men in prophylaxis open the discussion.

What I got up to say pertains largely to a phase of Dr. Conzett's paper, and that is on the etiology of dental caries. Dr. MaWhinney and Dr. Gilmer have discussed the pyorrhea phase of the question. Dr. Meerhoff and Dr. Bryant have discussed prophylaxis. Now I want to say something about the etiology of dental caries. Dr. Conzett made the statement that it has been demonstrated to be a fact that caries of the teeth is due to micro-organisms, in other words that we have carbohydrate material split by the action of a ferment into fermentable sugar, and certain acid producing organisms break that sugar up into an acid isomeric to lactic acid, if not lactic acid itself. Dr. Conzett says that has been demonstrated to be a fact, still in the same breath almost, if you observed it, he questioned whether it was or not, because he went on to cover certain conditions, and it was difficult for him to explain the cause of caries from that particular view point. He said something to this effect, that he believed there was yet an undiscovered substance in the saliva which produces caries, and this cannot be explained by the microörganic theory. Now ladies and gentlemen, every one of you has seen in your practice the mouths of servant girls who have come to this country, and at the time of their arrival their teeth, so far as dental caries was concerned, were perfectly normal. After some months in this country because of some unknown reason their teeth have simply melted away. You have observed that same condition in the mouths of American women during and immediately following the period of gestation. Every one of you can recall cases, especially in the mouths of men of middle age, where the carious condition has remained dormant for years, and then because of some strain put upon the nervous system the carious processes again become active.

I want to say this with regard to the microorganic theory of dental caries, that it seems to me that the dental profession has been forced to the alternative of accepting an explanation which does not fully explain, or else frankly admitting that there is much concerning the etiology of dental caries that we do not at present understand. Mr. Chairman, I am not a prognosticator, and I have seldom been accused of making rash statements, but I do want to say this tonight, for I believe that I am in a position to say it, that there will something take place in this city, and perhaps before this very society within the next few months that will shake—and I realize what word I am using—our confidence in the microörganic theory of dental caries. I am not going to discuss the etiology of pyorrhea because like every other dental pathologist I know very little about its real pathology. I do believe, however, we make a mistake in trying to trace all kinds of pyorrhea to one source. I believe Dr. Gilmer is correct in certain cases of pyorrhea, and I am optimistic enough to believe that someone will yet discover the germ which produces certain kinds of pyorrhea, but I know, as Dr. MaWhinney has intimated, that oral filth, and perhaps bacteria that lurk in and about the teeth are the cause of some kinds of pyorrhea, and I am not so certain but that there are still other kinds that may be associated with a gouty diathesis. So I believe that we make a mistake in trying to throw all the various phases of this disease together into one class, and try to find one particular cause for all the different kinds or phases of pyorrhea that come to us to treat.

I fully agree with Dr. Conzett's statement that this subject of oral prophylaxis is the most important subject before the dental profession today, and while I have not engaged in the work as much as I would liked, nevertheless there is not anything that I can do in the practice of dentistry with the same amount of satisfaction as to take my port-polisher and orange wood stick and polish the surface of the teeth of my patients. I get a good deal of satisfaction from the feeling that I am rendering to that patient the very best service of which I am capable. We cannot expect to do much, as the essayist has intimated, until we get out of the idea of throwing in the socalled cleaning with a $50 estimate, or simply charging a fee of $1.

Dr. Gilmer rejoiced over the fact that the essayist did not use drugs. While you see my name often associated with drugs in the journals I have often said that dentists expect too much from drugs. All you can expect of a drug or remedy is to aid nature in causing an abnormal condition to revert back to the normal. You cannot cure anything with drugs, but you can assist nature in her efforts to overcome certain pathologic conditions by the use of drugs.

There is one remedy to which I want to call your attention, and which I want to suggest to the prophylactic man to be used as a spray, and that is a zinc salt. It was introduced recently to the profession by Dr. Whitslar, of Cleveland—zinc sulpho carbolate. There is no doubt but that zinc in certain forms is one of the best substances to use in connection with the mucous membrane of the mouth. Now if you will use in your spray a 5 per cent solution of zinc sulpho-carbolate, dissolved in peppermint water or cinnamon water, and to that, if you use peppermint water as your vehicle for this solution add a grain or two of saccharin to half a pint of solution, because it masks the taste, and will make it more pleasant. If you use this spray I know you will get good results.

Dr. R. B. Tuller:

I simply want to verify something Dr. Buckley has said in regard to some of the servant girls who come to this country and develop a condition of caries that is unaccountable to me. I have now under my care a servant girl who has been but eleven months in the country, and hasn't a sound tooth in her head. Caries has gone on to such an extent that nearly every tooth that is still in the form of a tooth at all is almost in a jelly-like or cheesy condition, and the rest of the teeth, with the exception of some lower incisors, have simply the roots left. It is one of the most difficult cases I have ever had anything to do with, and there is nothing to be done but to make plates or bridges for this girl, and she is not 24 yet. She says this condition of affairs has come upon her since she landed in this country from Sweden.

Dr. J. N. Crouse:

I am a living example of caries going on extensively when I was young. Then I was immune from caries for 25 or 30 years, without any decay going on at all until within the last two years, when great sorrows have come to me, and those teeth have been decaying like wildfire. My mouth is so sensitive that I have great trouble in taking care of it. I think the condition of the mind has a great deal more to do with caries than we at all realize. Another point I want to raise, and that is in those cases where the sockets of the teeth are lost, where there is no deposit on them at all, simply the peridental membrane becomes atrophied. There is no stopping it. Then I have had cases where there is a deposit which takes place between the roots of the molar teeth. I could find no place where there was any possibility of anything passing around the neck of the tooth, and yet this deposit came, as if it was something like a broken bone. I could only extract the tooth. I spoke to Dr. Black about the tooth first, and I told him there was no breaking away of tissue around the neck of the tooth. He questioned that, and the next case I gave chloroform to, to keep her quiet. The pain was so excruciating that it was impossible almost to keep her in the chair long enough to take the tooth out. Those are cases that are extremely rare. I have had two of them in forty years. I do not believe that we know anything about the cause of dental caries.

Dr. A. F. James:

I want to bring out one point about sensitive teeth, and the splitting of gums. I think that that is due largely to the roughened condition of the gingival margins of enamel. The acid condition leaves the mesial and lingual margins of the teeth exposed, and the gums become split, or recede from the normal condition. I think by prophylactic treatment, and the smoothing of those enamel margins we can very often reduce that condition.

Dr. C. E. Jones:

Before this discussion closes, I want to take the privilege of going on record in support of Miller's hypothesis of lactic acid as the principal exciting etiological factor in dental caries.

Dr. Buckley has just stated that he has been unable to account for the changed condition in the mouths of the poorer class of immigrants, who, upon coming to this country with mouths free from caries, present after a short sojourn here, a marked changed condition, in which we find caries prevalent. This question is one which has occasioned all of us, perhaps, more or less thought. I would like to offer an explanation, at this time, of what I think causes this marked disintegration of tooth substance in the mouths of our new citizens.

The food products of the class Dr. Buckley mentioned are composed mostly of poly-saccharids or amyloses, having the formula of $C_6H_{10}O_5$ and which is represented in the forms of starches, dextrine, gums and cellulose. In order that we may have lactic acid formed from any of these poly-saccharids, they must pass through a long enzymotic process and be converted into maltose by hydration and from maltose to levulose and glucose and these to lactic. In spite of the rapidity of the ptyalin in its enzymotic action the mechanical arrangement of the bolus of food may prevent proper and complete salivation and diastasic action will not take place. Therefore, the amount of lactic acid is much regulated by the length of time the poly-saccharids are retained in the mouth and subjected to the action of ptyalin and bacterial ferments. Again the condition of the starch capsule has much to do with the intensity of the action of the ptyalin by inhibiting or retarding its action.

If ptyalin is prevented from coming in contact with these polysaccharids either by a mechanical barrier, in the form of unbroken starch capsules or by an arrangement of the bolus of food, they may not be converted into lactic acid at all. Miller proved conclusively that starch must first be converted into glucose by ptyalin before it could be fermented into lactic acid by bacteria.

I believe the character of the food products consumed by the various social classes regulates the amount of lactic acid produced by the organic enzymes. I bring up this suggestion because it appeals to me as a logical deduction, believing as I do the Miller theory of carbohydrate fermentation.

The foods consumed by the new made resident, after his arrival in this country, perhaps, take on the form of the monosaccharids or glucoses, to a greater amount than had been consumed in his native land and which we find represented by dextrose and levulose, having the general formula of $C_6H_{12}O_6$ which may be converted into lactic acid $C_3H_6O_3$ without the enzymotic action of ptyalin having played any part in their conversion whatever. This seems to account for the extent of carious conditions and by what agents they are influenced in the mouths of the various social classes.

I am not able, because of my inexperience to suggest anything to those men who are practicing oral prophylaxis, but it seems to me that there are several substances more soluble than is pumice that might be used with good results, and as a substitute, I would suggest precipitated calcium carbonate. This substance is practically insoluble in water, but its solubility is much increased by mild alkaline solutions or carbonic acid. In order to increase the solubility of the calcium carbonate, I would suggest, after removing the concretions from around the teeth that we pack in the interproximal spaces and at the gingival border, a quantity of the light magnesium oxide, which will form a gelatinous mass, commonly called milk of magnesia, in proportions of one of the oxide to fifteen of saliva. This mixture will not only neutralize any excessive acid condition in the mouth, but will hasten the solubility of the calcium carbonate and ultimately, cause its entire removal and irritating effects, also give the teeth a healthy environment. The calcium carbonate has practically no grit, which I feel is in its favor, because I believe a great deal of injury is done by the injudicious use of pumice. Supplementary to what Dr. MaWhinney has said, I feel sure that more injury is done to the gingiva of the gums by traumatism than through any other cause. You are all familiar with the healing of wounds and must realize that we always have an excessive amount of connective tissue elements in the repair of tissue which sooner or later will express a contractile tendency, causing recession of the gingival margin and subsequent formation of pockets for the accumulation of concretions, etc. This connective tissue excess will eventually lower the vitality of the mucous membrane surrounding the teeth and permit of ingress of infection, etc.

I appreciate hearing this most excellent paper and think the society is to be congratulated upon having a man of Dr. Conzett's caliber to present it.

Doctor Buckley:

I am glad to have this proposition explained. I would like to have Dr. Jones explain the rapid decay in American women, during and immediately after the gestation period, and also Dr. Bryant's case, with characteristic white decay.

Doctor Jones:

In answer to Dr. Buckley's question, I will say that I think in the cases of excessive caries found in American women, during the period of gestation and in the case Dr. Bryant cited, we have but to consider some of the predisposing causes of caries, and the particular condition that most suggests itself as predisposing caries in each of these cases is one of vitiated oral conditions, which permitted of the lodgment and retention of bacteria upon the surfaces of teeth and also the retention for a sufficient length of time, of suitable pabylum for their sustenance, such as carbohydrates upon which ptyalin may become active with subsequent formation of lactic acid by bacteria.

Dr. V. H. Fuqua:

I have enjoyed the discussion tonight, and feel that there is little left for me to say. I have been an advocate of this method for two years, and for that length of time practicing it—that is, in my own way—but I did not believe it were possible to ever place a bad mouth in any such condition as those patients that I saw under the care of Dr. D. D. Smith. I came home resolved to go ahead with the work just I had done, only a great deal harder, and to try and see if I cannot accomplish what I know is being done by others. It is a phase in the practice of dentistry we cannot afford to overlook, and we ought to forward the work. I do not believe that the danger lies in over-cleansing the teeth, but in the fact that we do not cleanse them enough. Oftentimes patients ask me how to clean their teeth. I tell them not to clean them, but to scrub them. I am trying to impress on my patients the necessity of having prophylaxis treatment. I try to impress upon their minds that they are not only having their teeth cleaned, but they are having this treatment of prophylaxis, which will prevent pyorrhea and decay. We should begin with the young patients, and teach them early prophylaxis and cleanliness of the oral cavity. If we wait until they are 35 or 40 years old they will come to us with a case of pyorrhea that we know is impossible to cure. I am not trying so much to cure pyorrhea and as I am trying to keep my patients from having pyorrhea and decay, and in doing that I am positive I am doing it through early prophylaxis by the methods taught by Dr. D. D. Smith, and I owe a great deal to Dr. Smith for the things I have seen in his office. I cannot tell you what those things are. You must go there for yourself, and all be converted, as I have been.

Dr. Conzett (closing the discussion):

I thank you very much for the kindly manner in which you received my paper. I am pleased, and yet not altogether pleased, with the discussion, because I had hoped that you would criticise me a little that I might be taught a great deal about a thing I know very little about. There is not very much I do know, and sometimes I think that there is not very much any of us know about these problems.

I want to thank you gentlemen who discussed this paper. It has not been possible, and I did not want to wander all over the universe in presenting this subject to you tonight. I had one idea in mind, and that was prophylactic treatment along certain lines, and I brought all my arguments to bear along that line. I will not discuss the other phases of the question tonight, because I want to forget them, and just present this one phase.

Dr. MaWhinney evidently supposed that I thought pyorrhea was caused by one thing, and that it could be cured by simply cleansing the teeth and removing the deposits. Dr. Smith says that can be. He says that he has never seen a case that he has not been able to cure by doing this very thing. Many men who have stood over his chair, and have heard the praise which the patients have bestowed on Dr. Smith, and have heard their testimony as to the condition of their teeth and mouth before cannot help but believe that he has done marvelous work along the line of curing and preventing pyorrhea. However, Dr. Smith does say that when a tooth becomes loose, extract it. I have seen cases where there has been no deposit on the tooth, and yet the disease has been present. I do not believe that the disease known by the name of pyorrhea alveolaris is the expression of any one cause. I believe that we have a great many diseases that we classify under the one head of pyorrhea. We do not know what else to call it. I do not know from personal experience that the vast majority of these diseases can be cured, and I believe the vast majority, if not all of them, can be prevented by systematic and careful prophylaxis. I do not believe that pyorrhea is entirely a disease of filth, and I do not believe that it is a disease of entirely local origin, as I tried to make plain in my paper. If you keep the gingival margins of the teeth clean in the very large majority of cases, if not all, you will prevent disease, and in those cases in which the disease has obtained more of a foothold you will cure the disease, but recognize this fact, that there is something back of that deposit, because if there were not then simply cleansing of that deposit would cure the disease. We know it doesn't. I do not believe that pyorrhea is cured by simply one cleansing of the tooth, but we must keep everlastingly at it, and Dr. Smith admits that. He says that the prophylactic treatments must be very frequent, and he has his patients come in every two weeks.

I appreciate the fact that in order to place the mouth in a hygienic condition all unhygienic fillings and bands must be removed. One of the greatest causes of pyorrhea is the unhygienic fillings and bands and crowns that are being placed, and I do believe that there is a great deal of crime being committed along this line by dentists, and in the name of dentistry. Dr. Smith says we do those things when we know we ought not to do them. We know our fillings are not curing the disease, but causing a very much worse disease. Fillings are so improperly made that they allow food to crowd in between the teeth and, impinging on the gingival, set up a gingivite.

Dr. Buckley evidently misunderstood my paper. I am sorry he did, because if he is going to bring out a theory that will overcome the bacterial origin of caries I am sorry I am on the other side. I thoroughly believe that the cause of caries of the teeth is a micro-organism, but what I said was that I did not know why there were times of susceptibility and times of immunity; I did not know why there were times when the organism became pathogenic, and other times when it was not. I did not know why in one mouth, in which could be demonstrated the same organisms, could be found decay of the tooth, while in another mouth there was not. I believe that decay of the teeth is caused by a micro-organic invasion of the teeth, but I do not know why it is that they do invade the teeth sometimes, and do not at other times; but I believe that when a tooth decays it decays because of bacterial invasion.

SEMI-CENTENNIAL JUBILEE MEETING OF THE INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will celebrate its fiftieth anniversary June 4, 5, 6, at Indianapolis, with one of the largest meetings ever held. The State Associations of Michigan, Ohio, Kentucky and Illinois have accepted invitations to meet with us. There will be five essayists: Drs. G. V. Black, Illinois; T. W. Brophy, Illinois; Charles Zederbaum, Michigan; M. H. Fletcher, Ohio; H. B. Holmes, Kentucky. There will be fifty clinicians from these four states and practically all other State Associations will be represented by clinicians. All ethical dentists are invited, as this will be the big meeting of the year.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL

THE RELATIONSHIP BETWEEN DENTIST AND PATIENT.

Dr. George L. Field of Detroit, Michigan, on retiring recently from practice after more than fifty-six years continuous service, made this remark to the writer: "I do not know of any other profession which brings a man into such close and long-continued relationship with his patrons as does the practice of dentistry, and I will not even except the profession of medicine."

Dr. Field's observation expresses a thought which has often occurred to the writer, and while there are doubtless cases where the physician is brought very near to the patient's interests when the delicate issues of life and death are placed in his keeping, and where the lawyer is admitted into the family skeleton closet when large financial interests or personal freedom are at stake, and where the pastor is taken into confidence in matters of the heart, yet with each of these there is something lacking when compared with the relationship which exists between the dentist and his patient after long years of professional and personal association. Each of these men sees his patient or client or parishioner under conditions which may be considered abnormal. There is accordingly a mental bias in every instance which really interferes with getting at the true or natural character of the individual. In the practice of dentistry this is not the case. It is true that many individuals come to the dentist at times with a certain degree of dread, but this is seldom so great as to make a serious impression.

Then again the fact that dental caries is the most prevalent of all human diseases makes the patient who is thus afflicted a more regular visitor at the dental office, and he becomes really better acquainted with the dentist than with other professional men.

All this tends to develop between the dentist and his patient a community of interest and a personal friendship which after years of practice in one locality forms a very valuable asset in the sum total of happiness. It would sometimes seem as if dentists do not always take full advantage of their opportunities in this respect. Their intimate association with people not only gives them the privilege of pleasant companionship, but it brings them the possibility of doing great good through the medium of personal influence. This applies particularly to the young element among our patients. Not that a dentist should always be preaching morality or religion to his patients—quite the contrary. But he should so deport himself on all occasions that those who come under his care cannot help being impressed with his gentlemanly qualities, and thus influenced for good by his example. A dentist in full practice has it in his power to be of immense benefit, aside from his professional services, to the community in which he lives.

He meets people for the most part in their normal relationships, and has a good opportunity to study and understand human nature. And a perfect understanding of human nature is really the best equipment for exerting a wide influence and accomplishing reforms.

Let dentists take advantage of their rare facilities, for extending human happiness, and the question will not long be raised as to the broadening and beneficent influence of our profession.

THE EDITOR'S DESK.

PERSEVERANCE.

One of the greatest factors of success in life is perseverance. To keep everlastingly at it is to win. The man who sticks at one thing only long enough to get acquainted with the angles of the game and then drops it is paying rent all his life—that is, he is paying rent or moving—while the man who perseveres owns his own home, and probably is collecting rent or interest. He is independent and does not have to dance to the tune of the landlord's fiddle.

"Be sure you are right, then go ahead," and keep going till you get there. If you stop half way, be certain you have gone the hardest part of the journey, and will fail to reap the reward. It takes courage and determination sometimes to persevere in the face of obstacles, but to develop such courage is to lend strength to your character. If you learn the lesson of perseverance, you have a liberal education, and it is an education that every one may acquire. It doesn't call for school funds or hamper the taxpayer, and the only teacher you need is yourself.

If Christopher Columbus had not persevered in the face of opposition from those about him, or if some other man later had not persevered in face of the same kind of opposition, you and I would probably have been born in some such incongruous country as Europe, Asia, or Africa—or more likely we would never have been born at all. Think of what a perfectly dreadful calamity that would have been.

When tempted to quit, just take a fresh hold and lift the harder. The plodder with average ability will distance the brilliant quitter nine times in ten—or in ten thousand. If you meet an obstacle, do not attempt to go around it, but climb right over it. The boat which attempts to go around a wave in a heavy sea gets swamped. Learn to climb.

If you have a good thing, stay with it till you make it better, and even if it isn't so very good, stay with it till you make it good. The greatest need of the world is development, and things cannot be developed without perseverance. The jumping Jack—or Bill—or Tom, who flits from one activity to another seldom lands squarely on his feet. He is usually looking for a soft spot to light, but the soft spots were all appropriated long ago. The only way to find a soft spot now is to make it soft by repeated impact. Keep pounding. The iron may not always be as hot as you would like, but remember that many of the opportunities of life weld cold.

Aiming high is most honorable, but stopping short of the summit is disgrace. Some men when they begin to see the rays of light over the crest of the hill get dazzled, and sit down on a mossy bank to breathe and exult. By the time they have rested and resumed the journey, they find the point of vantage on the top already occupied by the plodder. Keep at it while you are under way. To stop and start again—even if you ever do start again—is a waste of energy. It is lost impetus, and impetus counts in the home stretch.

Keep the machine moving while the bearings are warm enough to soften the oil. It is time to stop when the journey is ended, the work done, and the summit reached.

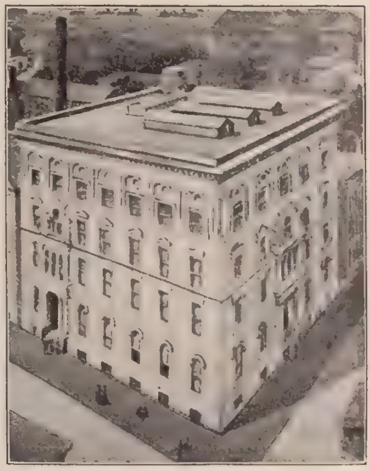
THE DENTAL COLLEGES OF AMERICA.

Department of Dentistry, University of Pennsylvania,
Philadelphia, Pa.
First Class Graduated 1879.
Total Number of Graduates to January, 1908, 2,193.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.
First Class Graduated 1857.
Total Number of Graduates to January, 1908, 2,900.

THE DENTAL COLLEGES OF AMERICA.

Philadelphia Dental College,
Philadelphia, Pa.
First Class Graduated 1864.
Total Number of Graduates to January, 1908, 3,124.



Dental Department, Medico-Surgical College of Philadelphia,
Philadelphia, Pa.
First Class Graduated 1898.
Total Graduates to January, 1908, 165.

Dental Department, University of Western Pennsylvania.
Pittsburg, Pa.
First Class Graduated 1897.
Total Number of Graduates to January, 1908, 440.

Dental Department of the Central University of Kentucky.
Louisville, Ky.
First Class Graduated 1887.
Total Number of Graduates to January, 1908, 800.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

NEW YORK, January 15, 1908.

Dear Mr. Editor:

The regular January meeting of the First District Dental Society was a huge one, as many who seldom come out were present to hear Prof. Edward C. Kirk of Philadelphia read a paper entitled "The Education of the Dentist."

Dr. Kirk began by comparing the requirements of fifty years ago with those of today. At that time nearly everything pertaining to dentistry was mechanical; there was little or no scientific effort, but the laboratory and shop were in evidence, while today many are demanding the collegiate degree as an evidence of fitness to enter on the study of dentistry.

Dr. Kirk did not deal with the subject of dental education, per se, but the education of the man up to the time of taking up the study of dentistry. He spoke of the many deplorable deficiencies of men of whom much more was expected as high school graduates which is the minimum qualification for admission to many or most of the dental and medical colleges. He gave a number of illustrations of faulty spelling and diction. One in particular seems unpardonable and Dr. Kirk and others say it occurs quite frequently. Dentistry is spelled "denistry." He assured us it was not an accident, but that the same error would occur all through the same correspondence.

Dr. Kirk said a great fault with many was the lack of observation and of individual thought or expression. He thinks that particularly in chemistry and physics men should have some elementary knowledge of the subject before they enter college. In other words, he believes that dental colleges should not be preparatory schools and that the first year is really a waste of time preparing men in rudimentary branches.

Prof. F. D. Weiss of New York opened the discussion. While he entirely agreed with the essayist, he would go a little farther on some points. He would advocate greatly increasing the effectiveness of high school education. Referring to Dr. Kirk's description of the spelling in some examination papers, he said "spelling is a gift of God. I would throw a mantle of charity over those who were unfortunate in that respect." He thought we needed more nature and less books—and claimed that being more in touch with nature would develop powers of observation which the student in the high school course needs.

Prof. S. H. Hopkins of Boston followed with some very emphatic remarks. He said that there would not be much improvement until the schools were not run for money. That they ought to be endowed, and thus placed on a basis where they could work freely. He strongly advocated a medical course first, and then two years in the dental department.

Dr. H. W. Gillett of New York, speaking of the question of incorrect spelling and the statement of some one that it was largely due to the conception of the thing meant, gave as an example of such conception the answer made by one candidate as to what were essential oils, which answer was "castor oil and cod liver oil"!!!

Prof. A. R. Starr of New York spoke very briefly, but while agreeing in the main with Professor Kirk, thought with Dr. Weiss that the mantle of charity should be thrown around many who showed faulty spelling on examination.

Dr. H. M. Dailey of New York thought that the entire school system of the United States would have to be reorganized and made more stable before any good could be accomplished.

In closing the discussion Dr. Kirk said that a great deal of time had been spent by him in the preparation of this paper; and that he had weighed every word carefully. All this was very evident, for the paper is one of the most excellent on the subject that has ever been written.

The regular December meeting of the Second District Dental Society in Brooklyn was held on Wednesday evening, the 18th. At this meeting committees from both First and Second district societies reported concerning "Public Health and Education," and a representative from the American Health League was present to give his knowledge and experience.

As an outcome of this meeting, another was held by this society. The call of the meeting stated that it was in order to secure uniformity in the lectures to be given by members of the dental profession in public schools. The Second District society invited Dr. Thaddeus P. Hyatt to deliver his lecture on "Ancient and Modern Dentistry and Care of the Teeth," as delivered in public schools. The lecture was illustrated with lantern slides.

On January 7th the New York Institute of Stomatology held the first dental meeting for 1908, with Dr. Charles Otis Kimball in the chair.

The essayist of the evening was Dr. J. A. Waas of Hammondton, N. J. His subject was "The Mummification of the Pulp." It was virtually the same paper as given before the Second District society in Brooklyn some two years ago, adding nothing thereto except that the intervening two years had shown a continuance of the well being of teeth treated by Dr. Waas as he described the method. The method is applicable only to recently exposed pulps—in no case, Dr. Waas emphasized, would he attempt the method where the pulp had become putrescent, nor in the six front teeth from which the pulps can readily be removed. He thought it, however, a very desirable procedure in the bicuspids and especially in the molars, in the case of a recent exposure, or of a desire on the part of the operator for any reason to devitalize the pulp. He would apply arsenic—devitalize—bur out contents of the pulp chamber, leaving in the roots the now devitalized pulp tissue and "mummify" that with a paste intended for that purpose, and proceed to fill at once. He claims complete success, and argues that there is no operator who can successfully fill the majority of pulp canals of molars. He presented a large number of teeth showing abnormalities of root formation, in support of his contention. It seems very doubtful, however, if anyone in active practice would come across such a large number of abnormalities in years of practice, and even at that of the teeth exhibited there were several with crooked roots, which many gentlemen present expressed themselves as being competent to fill such root canals thoroughly.

Dr. R. Ottolengui opened the discussion and made one very telling point, i. e., if Dr. Waas and other operators fill, and fill successfully, the canals of putrescent teeth (and Dr. Waas does not deny this), why then should not the same procedure be successful in teeth recently devitalized? Dr. Ottolengui could see no difference in root formation, accessibility, etc., between a molar with a pulp in a putrescent condition and a molar with pulp recently devitalized.

Drs. E. A. Boyer and Herbert L. Wheeler followed in somewhat the same line—evidently not agreeing with the essayist, but both agreeing with Dr. H. W. Gillett that in the treatment of the teeth of the poor in hospitals, and where expedition was necessary, the method might have much value.

Some time early in the winter it dawned upon the minds of some of our good men in New York, and especially Dr. William Wallace Walker, that there was a certain Jerseyman, prominent in our profession, whose accomplishments had never been publicly recognized. Consequently an executive committee was formed, with Dr. Walker as chairman, Dr. Herbert S. Sutphen of Newark, N. J., as secretary, and Dr. B. F. Luckey of Paterson, N. J., as treasurer, and some twenty-four others from New York, Brooklyn and New Jersey to complete the committee. As a result of their labors about one hundred and twenty-five representative men from north, east, west and south tendered to Dr. Charles A. Meeker of Newark, N. J., a "Testimonial Banquet" at the Hotel Waldorf-Astoria on the evening of Saturday, January 11, 1908, in what is known as the "Astor Gallery." It would be impossible to go into all the details. The invitation refers to Dr. Meeker's "having devoted himself for more than a quarter of a century to the advancement and elevation of Dentistry," and to his "unswerving allegiance to the dental societies with which he has been so prominently identified."

The slip from the treasurer says, among other things: "If all the dentists who have dined at banquets managed by Dr. Meeker should elect to attend, there is no hall which could accommodate them all."

Dr. Walker as chairman was in a particularly happy mood, and kept things moving in great shape.

Dr. Charles S. Stockton of Newark, N. J., was the first and probably most prominent speaker because of his nearness to Dr. Meeker. He laid great stress on the fact that Dr. Meeker was even better known outside his state than within it.

Mr. John J. O'Toole, a journalistic friend of Dr. Meeker, followed, giving some idea of what the newspaper men thought of the doctor.

Dr. R. Ottolengui then made some eulogistic remarks in his own peculiar manner, which carries weight with it always—and then, on behalf of those present, wedded Dr. Meeker more firmly than ever to the dental profession, saying as he handed the doctor a beautiful diamond ring, "With this ring I thee wed."

Prof. Wilbur F. Litch of Philadelphia had been expected to be present, but being detained, Prof. E. T. Darby was called on to take Dr. Litch's place. Professor Darby was received with deafening and prolonged applause. If there is any one man who has a stronger hold than any one else on the affections of the dentists of the eastern seaboard it is Prof. Edwin T. Darby. Naturally his remarks were only eulogistic. They could have been nothing else.

Mr. John J. Leidy of Newark, the editor of the *A. M. and P. M. Stars,"* as Dr. Walker facetiously put it, spoke of Dr. Meeker as the citizen of Newark.

Then came two good representatives of Chicago, and old-time friends of Dr. Meeker—Dr. W. H. Taggart and Dr. T. W. Brophy, who proceeded to throw some more bouquets at "our honored guest."

Dr. S. G. Perry was introduced, not as a dentist, but a "Pomologist," because of his vice-presidency of a pomological society. He talked at some length on fruits in general, and apples in particular, and let Dr. Meeker down easy.

Dr. B. F. Luckey of Paterson gave his views from the treasurer's standpoint, of the hard work which had been done, and of the great success of the banquet.

Dr. J. N. Farrar of New York was the last speaker—taking as his text the "Old School and the New," in orthodontia, claiming that there was really no "new school."

Thus closed a most memorable banquet during which at frequent intervals the slogan of the "Hornets" was sung: "It will do you no harm; says the Ragman to the Bagman, it will do you no harm."

You people of Chicago and all through the West who are much in evidence at dental society meetings will appreciate all this because of your knowledge of and acquaintance with Dr. Charles A. Meeker and other "Hornets."

"THE BOROUGHS."

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Dental Fees:—The practicing M. D. charges for every office visit, be the time ever so small, while the average dentist really makes all the treatments, consultations, etc., free! He often performs an operation of an hour that requires as much skill as many a surgeon's operation, and probably receives $2, while the surgeon receives $200. Some operators may get an adequate fee, but the fact remains that dental fees generally are too low.—*Abraham Waas, Philadelphia, Pa.*

Non-Cohesive Foil for Filling:—Do not overlook the value of non-cohesive foil for filling teeth, not in little pellets, but in rolls containing never less than one sheet and sometimes two or three. As a method it is quick and sure. I would prefer to use non-cohesive foil in proximal cavities of bicuspids with cohesive foil in the step, but I would not advise its use always to the exclusion of the inlay. Where an inlay is the best method use it, meaning always the cast inlay, and the very best one you can make.—*George W. Haskins, Chicago.*

Finishing the Posterior Edge of Rubber Dentures:—I think that a loose, ill-fitting denture may be responsible for sounds going in under the denture. This may be overcome, of course, by making the heel of the plate sharp, not blunt. We often see vulcanized plates finished up with a very thick edge at the heel, and I have often wondered how an operator could put such a plate into a mouth. I always make the edge as sharp as possible, so that the air that passes along the palate will not meet with any interference.—*E. J. Perry, Chicago.*

Filling Mesial and Distal Cavities in Molars:—A gold foil filling is indicated only where it is possible to direct the force of the plugger in a direction to pack and condense the gold, by mallet-force, against the walls and margins of a cavity, and therefore I believe it is possible to place an absolutely perfect gold foil filling in a mesio-occlusal cavity of a molar where it is practically impossible to do so in a disto-occlusal cavity, especially if much of the disto-lingual must be restored. Therefore, the gold inlay is especially indicated in a distal cavity.—*G. Walter Dittmar, Chicago.*

Contouring Artifical Dentures:—The tone of the voice can be very greatly modified by the form of the denture which is fitted in the mouth. In one case recently I found that the contour of the denture back of the anterior teeth was not correct. I removed the denture, built on wax at the point indicated, removed some opposite the cuspid teeth, and by a little manipulation was able to correct the defect. The practical side of this subject consists in constructing dentures that will not by reason of their form or contour interfere with normal sound production.—*J. H. Prothero, Chicago.*

The Cemented Joint:—The question of cementation is the one great point which inlay workers in the past have had to defend, but years of clinical experience in observation of my own and the conscientious work of others has convinced me that the cemented joint, instead of being the "weakest link in the chain" is the strongest, provided the inlay has been seated so as to resist direct and lateral pressure and perfect adaptation to cavity margins obtained. Just so long as cement is depended upon to retain inlays in saucer-shaped cavities there can be nothing but failure.—*Victor H. Fuqua, Chicago.*

Partial Impressions:—The taking of partial impressions is simplified by making a core for the places where teeth have tipped together. To do this, I use a piece of sheet lead cut to the right size for a tray and with a small amount of plaster or hard modelling compound take an impression of the undercut, removing lead, trimming core to right size and shape, slightly oiling it and the adjoining teeth and proceed as for a full case, except I oil the tray so it can be removed and the buccal part of the impression broken in as few pieces as possible; the lingual coming away in one piece. The core is then taken out and, with the pieces, adjusted in the tray and waxed together.—*C. L. Smith, St. Charles, Ill.*

Retaining Teeth by Means of Inlays:—In cases where the teeth have become loosened by the ravages of pyorrhea or by mechanical injuries, an excellent use can be made of gold inlays. Two or more teeth can be held firmly in place by an appliance made of two or more inlays soldered together and cemented in place. In cases where two teeth have become separated, allowing a space for food to lodge and cause an inflammatory and diseased condition of the tissues, which, as we all so well know, is the source of a great deal of trouble, can be corrected very satisfactorily by the use of two gold inlays, set mesio-distally and united or soldered at the occlusal angle, thereby retaining the two teeth in place, preventing the space from becoming larger, and closing it from any further wedging of food.—*E. M. S. Fernandez, Chicago.*

Development :—If I were to advise along the line of development I would suggest that, as individuals, we take up some line of thought and pursue it to accomplishment. If you are particularly interested in a certain subject, or feel the need of some appliance not yet obtainable, concentrate your thoughts along these lines and you will no doubt reap remarkable results. When we revert to those who have been important factors in the dental world, we find it was the giving and not the burial of some talent which all possess in greater or less degree. From this we may learn that no matter how unimportant some thought or accomplishment may appear to the individual dentist, when imparted to others it may be the nucleus of important discovery leading to greater light when the obstruction is removed.—*C. L. Snyder, Freeport, Ill.*

Painless Excavation of Cavities:—One very decided advantage of inlay work is the fact that it is practically painless dentistry. As a rule in every mouth we put on a rubber dam, and while we know that the cavity will be excavated with less pain in such instances with steel instruments if the cavity is dry, at the same time the friction is so great from the bur that there is great heat induced. I have learned more about that in the past year than I formerly dreamed of. In preparing cavities out of the mouth and holding the teeth with my fingers, I have been surprised how often I would have to drop the tooth, because it hurt my fingers. That has been taking place in teeth in the mouth, and even in pulpless teeth there can be pain.

Consequently doing it by the wet method reduces the friction in a way you can not get with steel drills in a dry cavity.—*W. H. Taggart, Chicago.*

Cause of Matrix Fracturing a Filling:—In some instances it is extremely difficult to remove the matrix from an amalgam filling as advantageously by drawing it to the mesial or distal as by the occlusal, and the result then is a piece of the material is broken from the occlusal of the filling. This spoiled many a filling for me until I discovered the cause. The matrix is higher than the proximo-occlusal margin of the adjoining tooth, and the filling material has been banked up higher than it should be, so while exerting the required pressure for proper condensation the matrix has been forced over this marginal ridge, and in removing the matrix the filling is fractured. By shaping the occlusal surface of the filling before removing the matrix or by cutting the matrix so it does not extend above the marginal ridge of the adjoining tooth, or better still, by doing both, I have not had this trouble.—*H. E. Latcham, Grand Junction, Iowa.*

Defective Articulate Speech:—By the study of the functions of the natural teeth in the formation of articulate sound, we are enabled to produce the best results in the construction of dentures, by following as closely as possible nature's plans, which enable us to discover where defective articulate speech occurs, whether in the setting of the teeth or shape of the plate wherever defects in denture occur that prevent pure, articulate speech. I would like to make some suggestions as to first steps in procedure in laying out mechanical plans. Before the teeth are removed, to be replaced with artificial substitutes, the patient should be instructed to articulate the vowel and consonantal sounds; to discover faulty articulation if it occurs. If some of the teeth have been lost, it has been claimed that the tongue has become thickened by falling into these vacant places. If this condition has affected the speech, it can be remedied. An impression of the mouth should be taken before the removal of the teeth. This model will serve as a guide as to height of ridge and general condition of the oral cavity. In some cases where singers are needing full or partial sets of teeth, the plan devised for resonance of tone sometimes interferes with the articulation of teeth for masticating purposes.. Should this occur a set can be provided for that purpose.—*J. H. Woolley, Chicago.*

MEMORANDA.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Minnesota State Board of Dental Examiners will be held at the College of Dentistry, University of Minnesota, in Minneapolis on March 10, 11 and 12, 1903. All applications must be in the hands of the secretary by February 25th. For further information address Dr. Geo. S. Todd, Secretary, Lake City, Minn.

ODONTOTECHNIQUE SOCIETY OF NEW JERSEY.

The regular meeting of the Odontotechnique Society of New Jersey will be held Thursday evening, February 6, 1908, at the Elks' Club, 37 Greene street, Newark. Dr. Ralph Waldron of Newark will read a paper entitled "Contracted Arches; Their Causes, Treatment and Results." At the March meeting, Thursday evening, March 5, a paper of extraordinary interest will be read by Dr. D. A. Webb of Scranton on the subject of "Malignant Growths of the Jaw; Fractures, Etc." Stereopticon slides will be used to illustrate his essay.

EXPLANATION NUMBER TWO.

The editor of the Illinois State Dental Society has become aware that finding fault, besides being a very unpleasant task always, sometimes also results in an injustice. Dr. J. S. Bridges, who was censured in the clinic report for failure to appear and make the clinic announced for him and neglecting to send any explanation of his absence, was detained by circumstances in his family which made it impossible for him to leave home. Nothing of it was known to the editor or the supervisor of clinics till after the publication of the transaction. EDMUND NOYES,

Editor Illinois State Dental Society.

RECENT PATENTS OF INTEREST TO DENTISTS.

872,091. Tooth brush holder. Fred J. Spangler, Labanon, Pa.
872,908. Dental floss. John D. Cutter, New York, N. Y.
872,626. Plate for artificial teeth. James Humphrey, Boston, Mass.
872,978. Making molds for dental inlays and the like. Wm. H. Taggart, Chicago, Ill.
873,015. Dental chair. Arthur W. Browne, Prince Bay, N. Y.
873,100. Dental broach. Carl A. Skalstad, Chicago, Ill.
874,281. Dental plugger. Robert H. Antes, Geneseo, Ill.
874,189. Dental articulator. William Hare, Galesburg, Ill.
874,199. Dental soldering apparatus. Jacob W. Horner, Columbus, Ind.
873,789. Artificial tooth, crown and bridge work. James B. Righter, River Falls, Wis.
874,131. Making toothpicks. George P. Stanley, and W. W. Tainter, Dixfield, Maine.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

PROGRAM OF THE G. V. BLACK DENTAL CLUB OF ST. PAUL.

The Annual Clinic will be held in St. Paul on Thursday and Friday, February 27 and 28, 1908, at the Old Capitol Building.

Thursday, February 27, 10 a. m.—Gold Fillings by Dr. A. C. Searl, Dr. F. S. James, Dr. J. W. S. Gallagher, Dr. W. D. James, Dr. K. E. Carlson, Dr. W. R. Clack, Dr. J. V Conzett, and Dr. W. H. K. Moyer. Cast Gold Inlays by Dr. W. N. Murray, Dr. G. N. Beemer, and Dr. J. O. Wells. Amalgam Filling by Dr. F. S. Robinson. Table Clinics—The list is not completed.

2 p. m.—Essay: "Western Dental Philosophy," Dr. E. S. Barnes, Seattle, Wash. Essay: "A Consideration of Western Dental Philosophy by an Eastern Man," Dr. Chas. McManus, Hartford, Conn.

8:15 p. m.—Illustrated lecture: "Pathology of Dental Caries."

Friday, February 28, 1908, 9 a. m.—Gold Fillings by Dr. Wm. Finn, Dr. W. C. Crandall, Dr. F. J. Yerke, Dr. A. M. Lewis, Dr. F. S. James, Dr. J. W. S. Gallagher, Dr. J. F. Wallace, Dr. C. H. Robinson, and Dr. A. C. Fawcett. Cast Gold Inlays by Dr. W. N. Murray, Dr. F. S. Richardson, and Dr. C. E. Woodbury.

2 p. m.—Essay: "Gold Inlays," Dr. C. E. Woodbury, Council Bluffs, Iowa. Essay: "Certain Phases of Our Professional Duty," Dr. C. N. Johnson, Chicago, Ill.

All the gold operations, with the exception of those made by Dr. Moyer, will be made in proximal or proximo-occlusal surfaces.

On Thursday, Dr. Finn of Cedar Rapids, Iowa, will demonstrate cavity preparation, instrumentation, packing of gold, etc., using large wooden teeth with cavities, clay, etc. This special demonstration will also be given on Friday. Dr. W. H. Taggart of Chicago will assist Dr. W. N. Murray upon both days of the clinic. A number of the manufacturers have written for space in which to display those things which are new. Dr. J. B. Ridout of St. Paul will demonstrate upon both days of the clinic. Every body interested in the advance and progress of the dental profession is invited to meet with and take part in our meeting. For further information apply to R. B. Wilson, secretary, American National Bank Building, St. Paul, Minn.

EL TERREMOTO DE SAN FRANCISCO.

(A Recollection.)

BY HOWARD N. LANCASTER.

While the faint stars gleamed and the city dreamed
Beneath the Western sky,
While the night wind sang and the echoes rang
With Easter praises nigh,
The mighty breath of an awful death
Swept through the midnight air,
And the frightful dawn looked down upon
The wreck of a city there.

The roofs whose span was made by man
For saint's or sinner's head,
Were swiftly turned, as they burned and burned,
Into tombs for the living dead.
And each anguished cry and pious eye
Turned upward to the sky,

Knew ere they died they were denied
    The answer from on high.

The houses that were built for man
    Fell burning score by score.
The houses that men built for God
    Were mockingly thrown o'er.
('Neath all that fell in that red hell
    Were those who walked before.)

The mighty Thought that havoc wrought
    Upon that awful night,
Spared naught within of good or sin
    From the horror of the blight;
And many a child in terror wild
    Sank evermore from sight.

Would the god above, be he god of love,
    So devastate the land,
And smite the earth which he gave birth
    And holds within his hand?
Will he use his laws 'gainst us because
    We cannot understand?

The Bishop sought with pious thought
    To soothe the people's care,
And others who believed they knew
    Contributed their share;
And the President, for blessings sent,
    Had offered up a prayer.

But the earth's pent force with its rumble hoarse
    Laid hold on the helpless town,
Nor ceased nor stayed till it had laid
    The tumbled ruins down;
And on that night by the flame-fed light
    Grim Terror wore a crown.

In the days of old, as men are told,
    When a city's doom was nigh,
The prophets sped with aided tread
    To warn those who must die.
That they might foreknow the coming woe
    And still have time to fly.

But the woe that came from the gods' grim game
    Played 'neath that Western sky,
Came with its fright in the still of night
    And none knew when nor why;
And no warning note was known to float
    To those who had to die.

While the faint stars gleamed and the city dreamed
    Beneath the Western sky,
While the night wind sang and the echoes rang
    With Easter praises nigh,

The mighty breath of an awful death
Swept through the midnight air,
And the frightful dawn looked down upon
The wreck of a city there.

And the Bishop will continue still
To calm the people's care,
And the President, for blessings sent,
Will offer up a prayer.
But with pent-up tear brave men will rear
With aid that others gave,
A city, fair, on the same ground where
There was a smoking grave.

THE

DENTAL REVIEW.

VOL. XXII. CHICAGO, MARCH, 1908. No. 3

THE ANATOMIC OCCLUSION OF ARTIFICIAL TEETH.*

BY J. H. PROTHERO, D. D. S., CHICAGO, ILL.

By anatomic occlusion of artificial teeth is meant the selection of teeth of proper size, form and shade to meet the temperamental requirements of the patient, and their arrangement and occlusion in accordance with nature's plan, so that normal jaw movements may be carried out in the mastication of food.

The development of this system, which was conceived before Bonwill's time, has progressed very slowly because of the meager and imperfect understanding of the mandibular movements involved in mastication. The text-books of today contain incomplete and inaccurate descriptions of the jaw movements that are of interest to the prosthetist. Bonwill's efforts and research work, while extending through many years and in many respects of great value, failed to bring out the most vital details. He believed he had solved the problem of anatomic occlusion, and up to the time of his death failed to recognize, or at least admit, that there were any imperfections in his system or appliances.

The first really scientific investigation of record relative to jaw movements in the living subject, was conducted by Bowdich and Luce of Harvard in 1889, but owing to the fact that their report appeared only in the Boston Medical and Surgical Journal, it failed to reach or benefit the dental profession. In 1894-5 Dr. W. E. Walker of New Orleans, without knowing what had been accomplished by the investigators mentioned, carried out a similar line of experiments on the living subject. His report was published in the *Dental Cosmos* in 1896-7 and today stands as the best and most complete scientific treatise on jaw movements extant. So far as the records show, Dr. Walker was evidently the first to recognize the importance of measuring the inclination of the condyle path and of the need of an occluding frame capable of reproducing the mandibular movements peculiar to each individual patient.

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* Read before the Chicago-Odontographic Society, November, 1907.

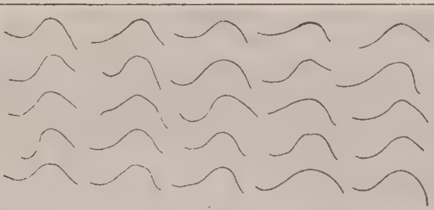
To occlude teeth anatomically certain conditions must be considered, and a number of important steps carried out. First—It is necessary to understand the mechanism of the masticatory apparatus and of such jaw movements as are normally carried on in the mastication of food. Second—An occluding frame capable of reproducing such movements in a fairly accurate degree is indispensable. Third—The relation of the natural alveolar planes to each condyle must be correctly registered, and the models mounted on the occluding frame so that their alveolar planes bear a corresponding relation to the frame hinges. Fourth—The inclination of the paths followed by the condyles in lateral and protrusive movements must be registered, and the slots on the frame representing these paths must be set at a corresponding angle. Fifth—Judicious and careful selection of teeth to meet the temperamental requirements of each individual case must be made, as previously stated. Sixth—The teeth must be attached to rigid base-plates for trial in the mouth, modified by grinding to correct disproportion in size and form, and to increase occlusal areas as well as to develop shearing properties and triturating power, and all so arranged that the lower teeth may be carried either laterally or forward along the lines of normal jaw movements while contact at several widely divergent points is possible without cusp interference.

In occluding teeth anatomically, three jaw movements must be considered: First—The hinge movement in which the jaw is opened and closed, the condyles remaining in the glenoid cavities and acting as centers of rotation. Second—The lateral movement in which one condyle serves as a pivotal point, the other being drawn forward in its path. Third—The protrusive movement in which both condyles move forward along their respective paths toward the anterior margin of the glenoid cavities.

Previous to the investigations of Bowdich and Walker, the idea prevailed that in the protrusive and lateral movements, the condyles moved horizontally forward. Their investigations clearly proved that the condyle path in almost every instance inclines downward as well as forward, the degree of inclination varying from horizontal to an angle of 50°, the average being about 35° (Fig. 3).

Frequently in the same individual there is a marked difference in the inclination of the two paths. Walker cites a case in which there was a variation of ten degrees in the condyle paths of the same individual.

In almost all cases of normal occlusion the tips of the buccal



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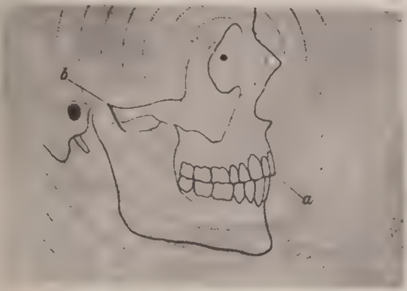

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cusps of the bicuspids and molars when viewed bucally, assume a curved arrangement, the convexity being downward (Fig. 4). This curve, if projected backward, will very frequently coincide with the curve of the condyle path. In other words the two curves will represent arcs of circles having equal radii and a common center.

When the curved arrangement of the teeth is less marked, it is found that the curve of the condyle path represents the arc of a smaller or inscribed circle having a common center with the arc intersecting the teeth, and hence running parallel with the latter (Fig. 5). The curve intersecting the tips of the cusps of the teeth is known as the compensating curve, or the "curve of Spee" from the man who first described it.

The center of these imaginary arcs lies in the region of, or above, the orbit. The flatter the curve, the farther above the orbit will be the center (Fig. 6). As the inclination of the condyle path decreases, the curve merges from the arc of a circle into a straight plane. Therefore when the condyle path is horizontal, the plane of occlusion will be flat. The two, while not in the same plane, will be parallel, however.

When the bicuspids and molars are viewed anteriorly, their buccal arrangement being curved as described, it will be found that the lingual cusps of the lower teeth are placed on a lower plane than the buccal cusps, while the lingual cusps of the upper teeth also assume a relatively lower position than the buccal cusps (Fig. 7).

Now if an arc be struck from above having the same radius as that of the buccal or compensating curve, and from a center located on the perpendicular median line of the face, it will intersect the tips of the buccal and lingual cusps of the teeth on both sides of the jaw (Fig. 8). Again when condyle path and plane of occlusion from before backwards is horizontal, the lingual and buccal cusps of the teeth in both arches are practically on the same horizontal plane.

Since in the lateral and protrusive movements of the jaw the lingual as well as the buccal cusps and marginal ridges of the lower are brought in contact with the corresponding surfaces of the upper teeth at many points, regardless of the fact that the plane of occlusion may be curved or flat, we are forced to the conclusion that the occlusal surfaces of the upper and lower teeth represent either

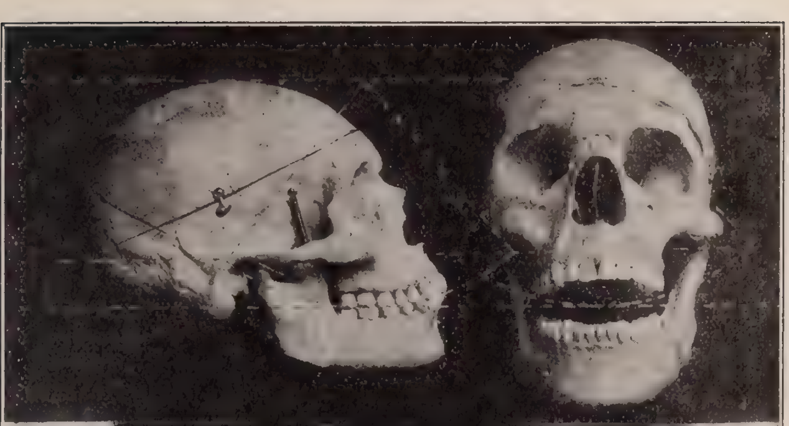


Fig 8

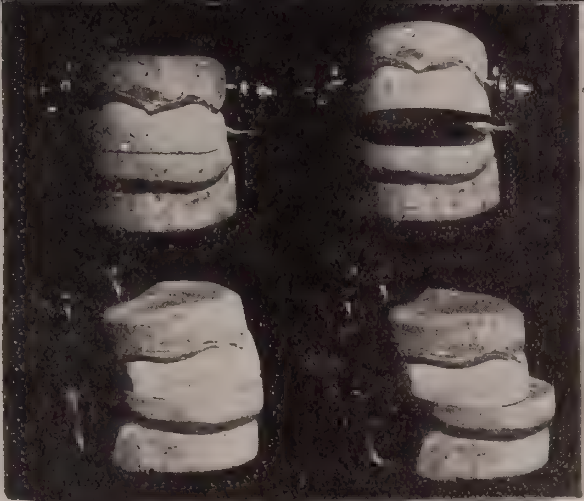


Fig 9

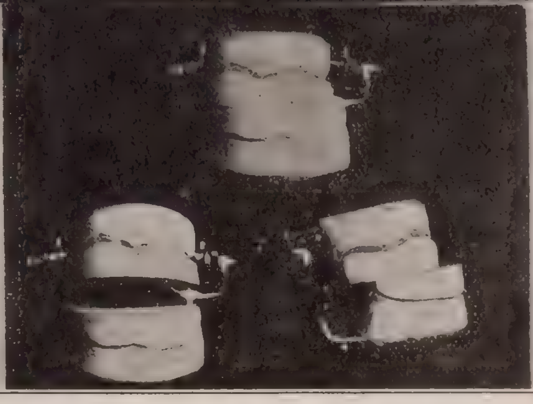


Fig 10

plane sections of convex and concave spheres respectively, or of two true planes (Fig. 9).

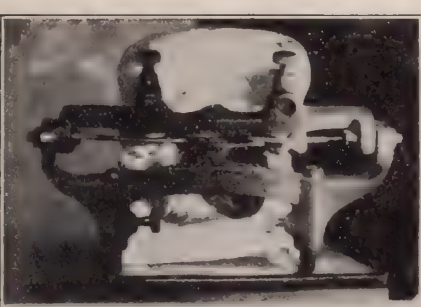
In the study of surfaces and solids, it is found that only two forms of surfaces can be made to move freely over each other in any direction without contact being disturbed, viz., a convex against a concave sphere and one plane surface against another (Fig. 10). The form and movements of the mandible together with nature's normal arrangement of the teeth, prove conclusively that in the arrangement of artificial teeth one or the other of these plans must be followed. The condyle path, representing as it does the section of an arc struck from the common center of the various curves mentioned, furnishes a true anatomical key to occlusion.

While the protrusive and hinge-like movements of the mandible are useful in certain steps in mastication, the lateral movement is by far the most effective for tearing asunder, grinding and triturating nearly all varieties of food.

In the lateral movement of the jaw one condyle becomes the pivotal point, while the other is projected forward usually about 3 or 4 mm. (Fig. 12). A forward movement to this extent is sufficient to carry the lower teeth on the opposite or pivotal side, outward far enough to bring their buccal cusps and marginal ridges directly under and in alignment with the corresponding cusps and surfaces of the upper teeth, the lower lingual cusps and marginal ridges sustaining a similar relation to those of the upper teeth also (Fig. 13). The extent of this side movement has been very appropriately termed "The Differential" by Dr. T. W. Pritchett.

When contact is effected by the closure of the jaw, the teeth being in the relation mentioned, it will be found that a long rectangular groove extending from the last molar to the first bicuspid is formed by the centrally inclined occlusal planes of the various cusps on the pivotal or working side (Fig. 14). The buccal muscles acting externally and the tongue lingually, direct the food into this groove as closure occurs, and as the mandible is drawn back to normal position the food is crushed and torn asunder and under repeated muscular action is insalivated and reduced to a suitable condition for introduction into the stomach.

On the opposite or projected side, the lower teeth are carried lingually until their buccal cusps and marginal ridges are opposite the lingual cusps and marginal ridges of the upper teeth. Contact at this side of the mouth is usually broken except at the extreme distal termination of the two arches (Fig. 15).



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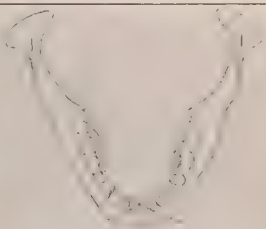

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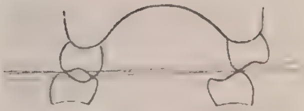

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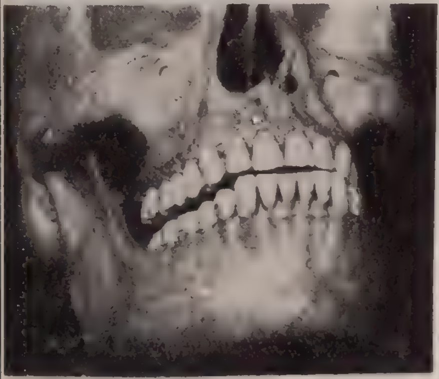

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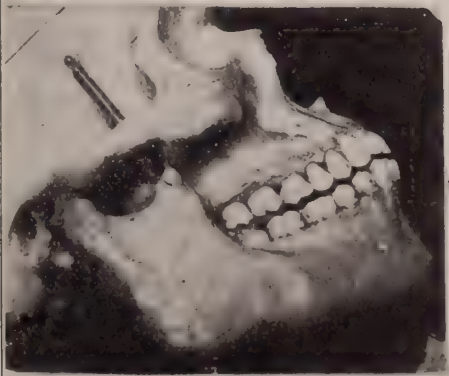

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When the third molars are in position it will be found that the disto-buccal cusp of the lower third molar, occupying a higher position in the compensating curve, is brought forward in contact with the mesio-lingual cusp of the upper third molar which occupies a lower position in the curve mentioned (Fig. 16). This is known as the "balancing contact." Without such contact it would be impossible for the full effective force of the muscles of mastication to be exerted in crushing the food on the opposite side of the mouth because of the tipping of the mandible.

The statement has frequently been made, and is still believed by many, that on account of the loose-jointed articulation of the condyles with their respective fossae, and of the great latitude of movement of the mandible in various directions, mastication is accomplished without well defined or systematized jaw movements, the teeth striking those in the opposite arch only occasionally in the same place.

Nothing could be more misleading than this conception of nature's most beautiful and perfect masticatory apparatus. The occlusal surfaces of the teeth present a series of grooves and ridges formed by the cusps and their various sloping planes. These surface markings are so located that they run with almost mathematical precision in the direction of normal mandibular movements.

The ridges of one denture glide back and forth through the grooves of the opposite to the full extent of the differential, much the same as the cross head of a piston rod moves back and forth in its guides.

In fact instead of the jaw movements determining the position of contact of the teeth in mastication, these alternate ridges and depressions control and guide the jaw movements in effective masticatory effort.

The theoretical phase of this subject has now been covered, briefly it is true, but sufficiently well to present the practical application of these principles to denture construction.

The best method of presentation will be to illustrate the successive steps in the construction of a full upper and lower denture (Fig. 18). The models having been secured, metal or other rigid unyielding baseplates are adapted to them. On these baseplates rims of wax are formed representing approximately the length of the teeth and the general contour outline required. These rims should be about 8 or 10 mm. wide across the occlusal and incisal surfaces, and flat from before backward as well as from side to side.

They are now introduced into the mouth and the rims reduced or lengthened, as conditions require, to establish the correct distance between the two borders and accomplish facial restoration. The labial and buccal surfaces are modified to also bring out proper facial contour. The upper rim of wax should usually extend about 1½ mm. below the upper lip when the latter is at rest. Variations from this rule, however, are occasionally necessary.

The lower rim should be of such height that when in contact with the opposite rim, the lower lip may rest normally against the upper without requiring any muscular effort to bring it in that position. If the rim is too short the lower lip will be pursed out and depressed; if too long, muscular effort will be necessary to bring it in contact with the upper lip.

Securing the correct length of each wax rim and of normal facial contour by the development of the labial and buccal surfaces at this time, are points of vital importance, any one of which if neglected or imperfectly carried out, will require much effort to subsequently correct. These various surfaces serve as guides in the incisal, labial and buccal alignment of the teeth, and if incorrect will necessitate changing the position of the latter when once occluded.

The median line of the mouth should be marked on the upper baseplate, sometimes a difficult point to determine, but by placing a cardboard or straight edge along the median line of the face and striking an average midway between the inner ends of the eyebrows, the philtrum of the lip and the point of the chin, the result will usually be harmonious and in keeping with the general features of the face.

The high lip line is secured by having the patient smile broadly, and marking the curvature and height to which the lip is raised on the wax rim. The low lip line is marked in the same manner. These lines serve as guides in selecting teeth of such length that neither too much porcelain or artificial gum will be exposed in laughing. When these steps have all been carried out, the general facial contour should again be reviewed and any corrections made that may be necessary.

The upper baseplate should now be removed, the crescent shaped plate of the stem of the face bow heated and forced into the wax rim well above the incisal surface, but not so high that the baseplate will interfere with the stem being firmly imbedded in the rim (Fig. 21).

To facilitate securing the correct relation of the lower to the upper jaw, commonly called "taking the bite," the stem should be removed and at the proper time it can again be inserted without difficulty.

Since in the use of the face bow it is necessary to locate the outer ends of the condyles in order to properly adjust the bow, and as this step requires freedom of movement of the jaw, the locations of the condyles must be found before stapling the baseplates together. The outer end of the condyle is usually located about 12 mm. anterior to, and on a horizontal plane with the external opening of the ear.

By placing the index finger at this point and instructing the patient to open and close the mouth slightly several times, any variation in location of the condyle from the point mentioned can readily be detected. Now with a blue soft pencil dot the face opposite the condyle end to obviate loss of time and insure accuracy in adjusting the bow.

"Taking the bite" is usually considered a difficult undertaking, but if proper methods are employed can be uniformly accomplished with precision. The method here outlined has been followed by the writer with uniformly satisfactory results for several years. The patient should not be told of the importance of the step about to be carried out, as his voluntary assistance under such circumstances usually results in failure. He should be instructed to relax the jaw muscles so that the operator can with slight effort open and close the jaw at will. The points of the fingers of the left hand should be placed on the point of the chin, while with the right hand the lips are held apart so as to well expose the wax rims. The jaw should now be slightly depressed and closed several times. Slight pressure should be exerted upward and backward to carry the condyles back in their sockets, but not sufficient, however, to compress the tissues in the glenoid cavity.

Under repeated opening and closing of the jaw while in a relaxed condition, the condyles will assume their normal position of rest in their sockets, and it will be noted that the lower will strike the upper baseplate in exactly the same location each time. When established, the baseplates are held in correct relation by means of two four-pointed staples, applied buccally, which when firmly imbedded in the rims prevent, not only separation, but the sliding of the plates one against the other. The relation is sometimes further secured by passing a hot instrument between the rims and slightly cementing them together in this manner. This precautionary measure is frequently resorted to, when the baseplates are large and the oral opening small, as in removal, distortion of the relation is liable to occur. When this method is followed, care should be taken to protect the lips from injury by the heated wax or spatula.

We now come to a very important and yet much neglected step, namely, that of registering the correct relation of the alveolar planes to the glenoid fossae by some means that will insure the models sustaining a similar relation to the frame hinges.

The face bow designed by Dr. George B. Snow of Buffalo, N. Y., fulfills the requirements mentioned in a very satisfactory manner, when properly manipulated.

The bite stem of the bow is returned to the position previously made for it in the upper wax rim fixing it solidly in place, melting the wax against it at several points if necessary. The central clamp of the bow is passed over the stem, the two condyle rods drawn out to their full extent, and the bow carried backward until the sides are horizontal (Fig. 23). This brings the condyle rods opposite the blue dots previously marked. The rods should be pressed inward until firmly in contact with the face, and the bow shifted if necessary to one side or the other until the same number of gradations show on each rod between the face and the inner side of the bow. The clamp nuts on the rods are now tightened, and the enlarged end of each rod accurately adjusted on the pencil marks opposite each condyle. The central clamp nut is next tightened, which locks the stem firmly to the bow.

Extreme care must be exercised to prevent gravity or the torsion resulting from tightening the central clamp from disturbing the relation of the side rods with the condyles, which unless closely observed, are frequent sources of error (Fig. 24). To overcome this difficulty the writer has designed an appliance for supporting the distal ends of the bow, which at the same time is an aid while adjusting the latter, and holds firmly, when secured, the correct relation of the several parts.

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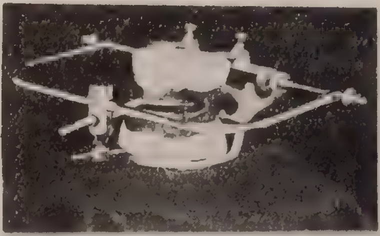

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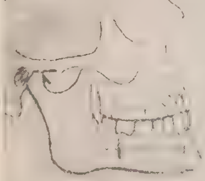

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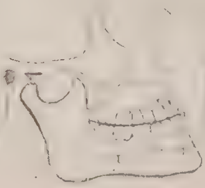

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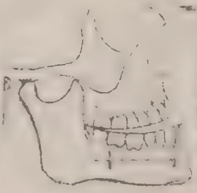

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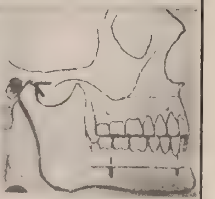

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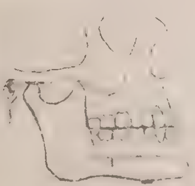

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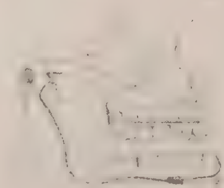

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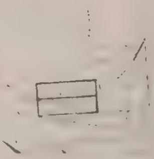

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The central clamp nut being tightened, the clamp nuts on the sliding rods are loosened, the rods drawn out, the stem of the face bow attached to the baseplate firmly grasped, and the latter removed from the mouth (Fig. 25). The sliding rods are now pressed inward to their full extent and clamped, the upper bow of the occluding frame is thrown back, and the depressed ends of the side rods placed over the hinge projections of the frame. The upper model is placed in its baseplate, the upper bow dropped down upon it, and the model attached in the usual manner (Fig. 26). When set the entire apparatus is inverted, the lower model placed in its baseplate and attached to the lower bow in the same manner. The face bow and staples can now be removed, when the case will be ready to proceed with the registration of the condyle path.

The necessity for carrying out this step is apparent. Failure to arrange the occlusal planes of artificial teeth in the same segment or plane, or one parallel with the condyle path, will positively inhibit the normal masticatory movements, excepting the hinge motion, or if the lateral or protrusive movements are employed, will result in denture displacement.

The figure shows two possible condyle paths, one horizontal, the other inclined (Fig. 27). The teeth are arranged in a compensating curve coincident with the lower condyle path. Now as the jaw moves forward the lower teeth are carried forward against the uppers, contact being maintained at many points, thus insuring stability of the dentures (Fig. 28).

Suppose, however, the condyle followed the horizontal path, the arrangement of the teeth being the same as in the first instance (Fig. 29). The result is that the lower are thrown in contact with the upper molars, while the anterior teeth are forced apart.

The next slide illustrates the resultant effects of similar condylar movements in a case in which the teeth are arranged on a horizontal plane (Fig. 30). When the condyle follows the upper path contact of the teeth at many points is maintained (Fig. 31). When the condyle takes the lower path the molars are thrown apart and the anterior teeth brought forcibly in contact, which would result in distal tipping of the dentures (Fig. 32).

These conditions have been met and are familiar experiences with the writer in the past, and the same is no doubt true with others present. The illustration now on the screen shows a diagrammatic view of the normal and protruded relation of the condyle in its path, and of the baseplates to each other. Upon being protruded, the posterior portion of the jaw drops downward on account of the inclined condyle path (Fig. 33). This movement throws the baseplates apart distally, while the incisal borders remain in contact, the lower being protruded slightly. In practice to prevent the tipping of the baseplates, spurs of metal or rolls of wax are placed in the occlusal region to force each baseplate against its respective border.

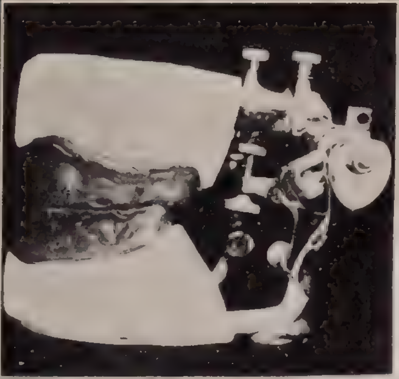
Now what has occurred? The anterior surface of the condyle and the anterior margin of the lower baseplate represent two points in the periphery of the concave sphere before referred to; the condyle path and the anterior margin of the upper baseplate two points in the periphery of the convex sphere, while the forward movement of the jaw completes the example of one sphere sliding against another. By studying the diagram of the jaw in its protruded position, it will be seen that the condyle moved in a definite direction to produce a definite amount of separation of the baseplates. Any variation in amount of movement or direction would have been recorded between the baseplates by a resultant difference in space outline.

The practical steps are as follows: After mounting the models on the frame, the face bow and staples are removed from the baseplates (Fig. 34). These are now removed from the models and on the occlusal surface of the lower wax rim a metal plate with tapering pin is inserted in the region of the first molar and well to the lingual side. This device is a suggestion of Dr. Snow to take the place of the rolls of wax (Fig. 35).

The baseplates are now returned to the mouth and the patient instructed to protrude the jaw slightly. Three or four mm. will be ample (Fig. 36). Too much protrusion will often result in an incorrect record of the condyle movement concerned in mastication.

Fig. 37 shows that although the condyle path is usually curved, yet the short distance traversed by the condyle in carrying the lower teeth outward the full differential extent is so slight that practically it represents very nearly a straight line or a short cord of a large arc.

If on the other hand the condyle moves forward a considerable distance, the starting point and the terminal point of movement represent a long cord of a similar arc, comparatively speaking.



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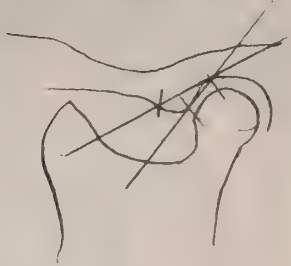

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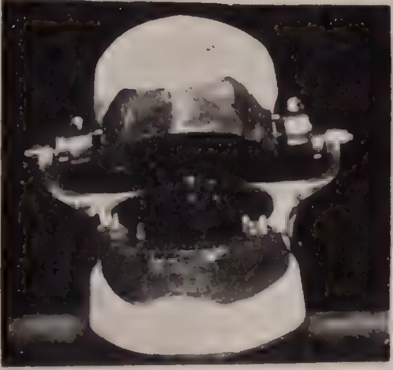

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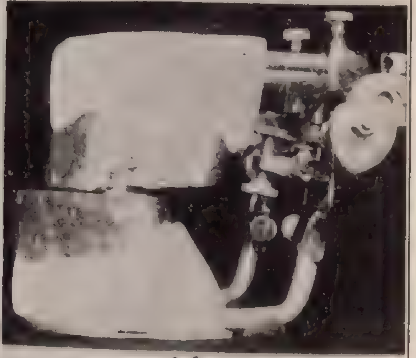

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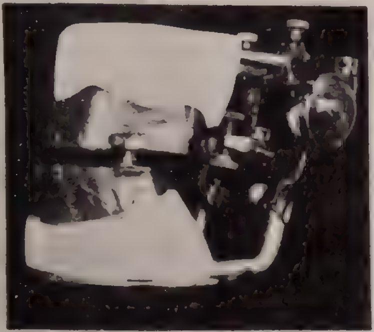

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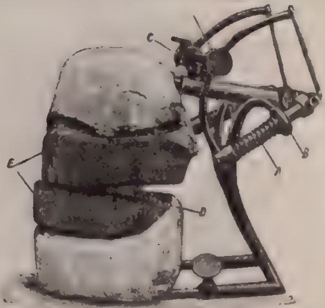

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Therefore care should be taken that the condyle movement does not exceed the differential limit, or the result will be an incorrect record of the condyle path.

Pressure is now applied under the chin and the patient instructed to close the jaw, which forces the pins of the bite gauges into the upper baseplate, and brings the incisal rims of wax in contact. The staples should again be applied to insure the exact relation of the baseplates being maintained in their now partially separated condition, and the two removed from the mouth (Fig. 38). The hub clamps controlling the condyle slots of the occluding frame should be loosened and the controlling spring thrown out of action. This permits the lower model to be moved in a spherical plane within, of course, restricted limits.

Theoretically, the upper baseplate is placed on its model, the case inverted and held in the hand, and the position of the lower model is found in its baseplates by moving the lower portion of the frame forward, thus simulating the protrusive jaw movement which occurred in taking the bite. This adjustment of the lower model to its baseplate automatically determines the slot inclination on the frame, and by holding the two models firmly in their respective baseplates, the clamps controlling the hub slots are tightened, which immovably fixes the slots in their proper position.

It will be found more convenient in practice to reverse the order of procedure here given by placing the lower baseplate on its model first, and then moving the upper model backward until it drops in position in its baseplate (Fig. 39). The result is precisely the same. Fig. 39 illustrates Christiansen's method of using rolls of wax for holding the baseplates apart.

The staples and spurs are now removed and the two baseplates separated (Fig. 34). By throwing the spiral spring into action, the baseplates will assume their former relation to each other, the only change noticeable being a different inclination of the condyle slots which of course carries the lower model in a different and anatomically correct line of movement, a condition not possible before the registration of the condyle path was effected.

The rims of wax on both sides buccally should now be modified from flat planes to curved, and by trial with the lateral movement of the frame, made to slide against each other without contact being broken. If the spherical likeness is kept in mind the arrangement can be easily and quickly effected. The inclination lingually of the occlusal surfaces of the lower and the building down of the corresponding surfaces of the upper rims must not be lost sight of, as these surfaces properly developed assist materially in bringing the occlusal surfaces of the teeth into correct adaptation.

The steps of vital importance in this system, some of which have not been generally understood, have been briefly covered. One other still remains to be mentioned, which to some perhaps at the outset of this paper, appeared the most important of all, namely, the modification by grinding of artificial teeth.

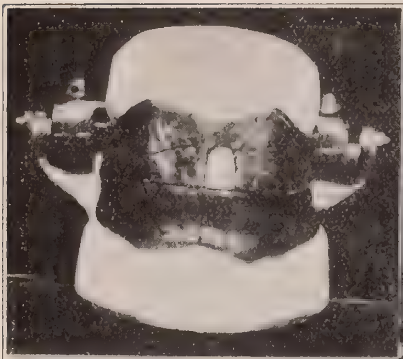
This is a most important phase of denture construction, but regardless of how expert one may be in modifying the forms of artificial teeth, if the correct foundation has not been laid, as for instance, good models, correctly mounted, on a frame that will reproduce accurately the masticatory movements, only meager success will be attained.

Little or no grinding with teeth anatomically placed, providing the teeth are of fairly good form, will produce better results for the patient than much grinding with the teeth arranged by guess-work. Combine the two, however, and results that few have dreamed of, and fewer still have realized, can be attained.

Usually the central grooves of the bicuspids and molars should be more clearly defined, not so much in an effort to deepen them as to convert the centrally inclined planes of the various cusps from rounded tubercles into somewhat broad areas of contact with the opposite teeth.

During arrangement the mesial and distal slopes of the various cusps will require modification, sometimes in their angle of inclination, and again reduction in height. Frequently the mesial or distal axial surfaces must be reduced, to correct disproportion in size between the upper and lower teeth.

The actual process of arranging the teeth in the wax is simple, and yet it must be carefully carried out. A section of wax corresponding to the width and length of a central incisor is removed, the tooth carried to place and its labial and incisal alignment found by these surfaces of the wax rim (Fig. 41). The wax around the pins is melted to hold it securely in place, and another section of wax is in like manner removed for the lateral or opposite central (Fig. 42). In each case only enough wax is removed to receive a



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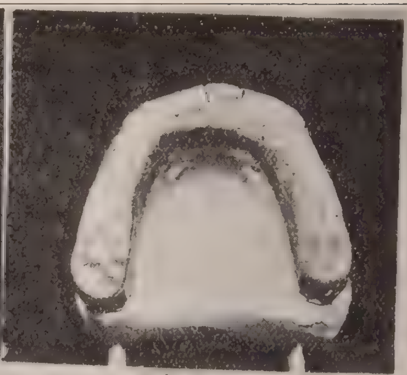

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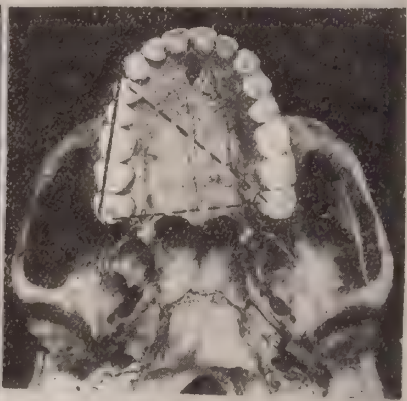

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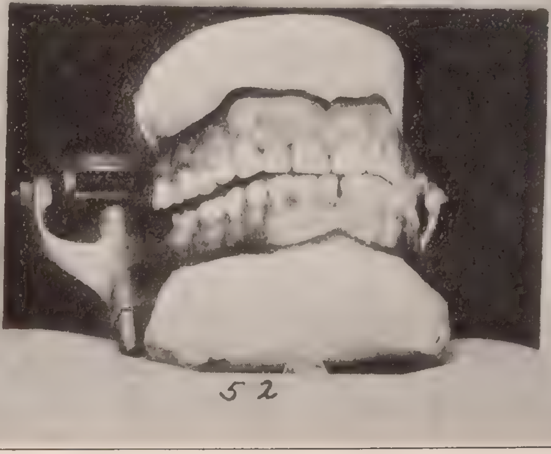

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single tooth, which leaves the undisturbed rim and the tooth last placed, to serve as the alignment guide. Usually the entire upper denture is arranged first, although this is a matter of choice (Fig 47).

As more or less disproportion usually exists between the upper and lower teeth, it will be found more convenient for the beginner, after arranging the upper teeth as described, to place the lower second bicuspids in position first, then the first bicuspids, and on around to the centrals, then the first molars and finally the second molars.

As each tooth in the lower arch is placed in position, its occlusal form, height and transverse relation to the occluding teeth should be tested by the lateral movement of the frame. The corrections are made by grinding at such points as interfere on either the tooth itself or the opposing tooth or teeth. Special effort should be made to secure close contact of the lingual marginal ridges and cusps of the lower with those of the upper teeth on the pivotal side.

Finally the lower second molar must be so placed on the balancing side that when the jaw is moved the differential limit, its disto-buccal cusp will find contact with the mesio-lingual cusp of the upper second molar (Fig. 52). This insures a balancing contact, indispensable for bringing out the full effective force of the muscles of mastication, and insures stability of the dentures under stress. The dominant idea is to copy nature's plan as closely as possible.

This has been called three-point contact. The term, however, while it expresses what actually exists, does not express enough, and therefore is misleading (Fig. 48). When anatomical occlusion has been secured, this is what actually exists. On the pivotal side of the mouth, the teeth being moved to their differential position, the buccal and lingual marginal ridges of the upper and lower bicuspids are in close contact. This may be said to represent the base of a triangle extending from the first bicuspid to the second molar with contact throughout the entire extent of the base. The apex of the triangle is at the balancing point of contact. Thus the contact is grouped along the sides and apices of a three-sided figure, which no doubt gave rise to the expression "three point contact."

I am convinced that the system of anatomical occlusion of artificial teeth is now logical, practical and capable of everyday application, particularly since the last gap has been filled in such a simple and practical manner. I refer to Christiansen's method of measuring the condyle path. With each one now it is only a question of securing the proper appliances and working out the details in a practical manner, and I feel safe in saying that he who earnestly and sincerely makes an attempt along the lines mentioned, cannot fail to see the utility as well as simplicity of the method described, and will discard the plain line articulator, which is incapable of reproducing the most essential masticatory movements.

ORAL PROPHYLAXIS.*

BY C. E. MEERHOFF, D. D. S., CHICAGO.

A more or less comprehensive discussion of the subject of oral prophylaxis would seem to require a brief consideration of, firstly, conditions suggesting or requiring oral prophylaxis; secondly, the method by which this ideal condition is obtained; thirdly, some of the benefits to be derived.

Some of the many conditions, one or more of which are almost invariably found in every case presented, and which naturally suggest this treatment, are caries, deposits (either hard or soft), upon the teeth, malocclusion, faulty interproximal spaces, unsanitary crowns and bridges, partial dentures and syphilis.

Without entering into a discussion as to the cause of caries, it appears to be the generally accepted belief that wherever an unclean condition is found, decay of the teeth will be found to a greater or less degree. From time immemorial, the first rule in the treatment of all pathological conditions has been the removal of the cause; and while in the past filling of the teeth has supplied our only remedy for its correction, the act of filling a tooth has not only failed of a cure, but has in many cases by reason of injury to the tissues in instrumentation or through faulty reproduction of tooth form, been the direct cause of pyorrhea or gingivitis. Because this is so, and because our only treatment to date lies in local intervention, the necessity for greater cleanliness is at once apparent.

If there is one condition of the mouth which calls for this treatment more than another, it is that of so-called pyorrhea or gingivitis.

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* Read before the Odontological Society of Chicago, Ill., October 22, 1907.

The inefficiency in the removal of the deposits from the teeth, due largely, I believe, to indifference on the part of the operator, would seem to appeal to us for better efforts in this direction, or there is a danger that the term pyorrhea may become synonymous with reproach to the general practitioner.

Too often the operator delays until a more or less tumid condition of the gums or pyorrhetic condition of more or less severity exists, before concluding to adopt *any* form of treatment.

From observation I have determined that a fair percentage of the profession attach sufficient importance to the hard deposits to attempt their removal, but I believe the irritation and the consequent inflammation caused by the soft mucoid deposits about the necks of the teeth and in the interproximal spaces, their removal, and the continued cleanliness of those places are overlooked by many.

According to Dr. George W. Cook, these mucoid deposits are the result of the degeneration of epithelial structure, are of acid reaction and destructive to tooth substance.

In malocclusion oral prophylaxis offers practically the only guarantee against pyorrhea—this is not only true where great deformity exists, precluding the possibility of self-preservation, but particularly in that large class of cases where one or more teeth have been lost early in life, causing the tilting or migration of the adjoining teeth.

Another large class of cases suggesting this method is where we find excess of plastic filling material extending beyond gingival margins of cavities, even where mechanical correctness as to contour and contact have been observed, and a careful study on the part of every dentist will convince him that he, too, is not entirely blameless.

The advent of the gold inlay as a simple filling or as an abutment in bridgework, either fixed or removable, has succeeded in circumscribing the use of all kinds of crowns; and banded crowns, which, through faulty adjustment, have caused a gingivitis, should be removed, and some form of bandless crown substituted if a healthier condition is desired.

The ease with which the bandless porcelain crown is now adapted readily recommends it as a proper substitute, preferably where a floor is adapted to the end of the root, and a joint so made, requiring the minimum of cement.

Partial dentures contribute much to the uncleanliness of the mouth, by reason of close adaptation to the teeth, and uneven pressure, and the pumping of secretions into spaces often causes much damage. The best interests of the patient often demand their removal and the substitution of some better form of appliance.

Text-books on operative dentistry and those covering pathological conditions found in the oral cavity would suggest an infinite number of other conditions demanding intervention in order to obtain a sanitary condition, but these few readily suggest themselves.

Now, the particular procedure upon which Dr. D. D. Smith and his followers insist follows upon such treatment as has been advocated to correct the foregoing conditions. Dr. Smith, to whom the credit is due for having evolved this scheme of treatment, defines it as consisting of "enforced, radical and frequent change of environment for the teeth, and perfect sanitation for all oral conditions.

In extreme cases of neglect, misuse or disuse of the teeth, where any effort at relief would be accompanied by much hemorrhage, I have found it sometimes advisable to begin with a more or less superficial treatment of the mouth and dismissing the patient, with instructions to use hot bicarbonate of soda solution freely until the subsequent sitting, when some point would be selected to begin with thoroughness. Where pyorrhea is present, the affected tooth should be scaled with all the skill and exactness at the operator's command, using great care in so doing to avoid injury to the pericemental membrane, and where deep pockets are found, to obviate any roughening of the cementum, flushing the area from time to time to remove the debris. Each tooth should be carefully scaled on all surfaces before proceeding to its neighbor.

Use is now made of orange wood points shaped to meet the requirements to carry finely-ground pumice in the polishing of all accessible surfaces of the teeth by hand, straight sticks being used to reach the points easy of access, and angle-porte polishers for the more inaccessible places. The sense of touch will readily determine for the operator when a surface has been freed from any roughness or from the soft mucoid deposits.

Polishing by hand is advocated because it produces better results than the brush or rubber point in the engine hand piece and greater precision may be exercised to avoid injuring the festoons of the gums.

Phenol sodique may be used advantageously to assist in carrying the powder to the mouth, and incidentally diminishes the soreness caused by the instrumentation. As an adjunct in the treatment, ribbon floss, used as one does the sandpaper strip, will be found of great value in polishing the proximal surfaces of the teeth, used either plain or waxed to carry the pumice. Cutter's letter "R" waxed has proven best in my hands.

During the polishing the operator may carry on his campaign of education and thus enlist his patient's interest, without which he may hope for little result beyond temporary comfort. The treatment is completed by spraying the teeth and adjacent tissue with some astringent solution, using sufficient compressed air to remove all fine grains of pumice to avoid irritation. At this time the patient should be instructed in the proper way he should brush his teeth and use the floss and quill toothpick.

Study of the individual case in hand should be made to discover the region most neglected, and the patient provided with the brush or brushes suited to his case. While I believe some harm is done by too much brushing, it more frequently follows the use of the brush in an unintelligent manner.

Where patients are provided with the floss silk, unless properly shown (not told) how it should be used, they are liable to report to you at a subsequent sitting or after some months have elapsed, showing a considerable damage to the gingival tissue owing to abuse.

This thorough polishing is to be repeated at intervals of one month or less, as conditions seem to require. This should be an inflexible rule, at least until complete resolution has taken place, loose teeth have become more firmly attached to their sockets, and the surrounding gum tissue firm and unyielding. At these times the operator should study the results, noting and correcting the omission of his patient in the care of such points as are most frequently neglected—the buccal surfaces of upper molars—the lingual surfaces of lower incisors and molars. To ascertain whether the patient uses the brush in the right or left hand is often of assistance in remedying these evils. Remember, one treatment does not constitute oral prophylaxis, and the interest of patient or operator, as outlined above, cannot be acquired or maintained except after months of treatment.

Now, you may ask what is to be gained by all this effort? Oral prophylaxis *is* preventive dentistry—it is not advocated as a panacea for all the ailments of the oral cavity, and while it may be called a more or less empirical practice, it requires as much intelligence and as great skill as do the other branches of our practice.

There can be no doubt that when systematic treatment is begun at a sufficiently early stage much of the decay of the teeth may be obviated. That it does retard the progress of caries is obvious. It offers one of the most potent, if not the only, means of curing pyorrhea, when systematically followed up, and, where the tendency only exists, to thwart the ravages entirely. The life of all operations upon the teeth is increased, and not only is this true, but the patient experiences such comfort from day to day as to make the necessity for dental operations appear only as an aid to the maintenance of that comfort, and little to be dreaded.

If it is true that fewer bacteria are present in the mouth after eating, it must follow that their absence is due to their removal during mastication; and their subsequent entrance into the stomach is not vital to the discharge of the normal function of that organ. It is only fair to believe that a sanitary mouth will correct many disorders of the stomach. It seems to me to be within the bounds of reason to believe that after a period the friction of the orange wood stick and the heat generated thereby, applied, as it is, at intervals, would be the means of contributing to the vitality of a tooth and increasing the circulation in the pulp.

The general usefulness of the teeth as a masticatory apparatus is enhanced by the perfect sanitary condition of the mouth, and where lost teeth have been properly replaced, all the teeth are freely used, where in many cases all the work capable of accomplishment was done on one side.

When it becomes necessary to treat the condition of teeth and gums found in syphilitics, a rigid observance of the rules of oral prophylaxis will be the means of saving more teeth and adjacent tissue than any local method of which I know. A case recently under my care even under adverse conditions has succeeded beyond my fondest hopes, and where the loss of at least four teeth was predicted, it has not been necessary to remove one.

I have observed one particular case where the saliva was changed from an excessively "ropy" condition after one year's treatment to what is practically normal.

A pronounced change in the life-like appearance of the teeth is noticeable after a time, and those teeth affected by erosion lose the extreme sensitiveness usually present. Mouths in which the slightest injury—even the contact of a toothbrush—was immediately followed by the flow of blood will, after treatment, withstand a degree of necessary manipulative abuse, or massage, which could not be applied prior to prophylactic treatment.

The care given to the necks of the teeth has proven to be the means of diminishing the number of unsightly labial and buccal fillings required. The necessity or the desire on the part of the patient for the continuous use of mouth washes is curtailed.

Aside from the value of oral prophylaxis as a means of acquiring true sanitation of the mouth, the influence of the training of the patient in the proper care of the teeth will be productive of much good to the teeth, and directly or indirectly the general health of generations to come.

PRESIDENT'S ADDRESS.*

BY GEORGE W. COOK, D. D. S., CHICAGO, ILL.

On retiring from the presidency of the Odontological Society, I do so with a feeling of regret, for it seems to me that this past year has not been as fruitful of good work in scientific papers and discussions as it should have been. But, on the other hand, when we think of the papers that have been presented, and the discussions that have followed, and also that social intercourse that exists among the members of this association, I perhaps should not have the feeling that I have in retiring, with so little work accomplished in a scientific way. We have had many guests with us the past year that have ably contributed to the social and scientific betterment of our association.

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* Read before the Odontological Society of Chicago, November, 1907

Dr. Case presented one of his able and interesting papers in the field of Orthodontia. This paper was discussed and all were much profited by it.

Dr. C. N. Johnson also presented the association with a paper that was of the characteristic value that his papers always are. Dr. Johnson is always willing to give his best energy in presenting any subject of interest to our profession, and especially to this association.

Dr. Royce gave a paper on what he called "The Sequel of the Inlay." The subject was treated with that careful thought with which the essayist is usually noted for. The method advocated there was in the main to act much as an inlay. I might say that I have tried the method and in some cases nothing could give more universal satisfaction.

Dr. Brophy presented the society with a clinical lecture on the subject of "Tumors of the Oral Cavity," and presented an interesting case on which he had operated several months before for a giant cell sarcoma of the upper jaw. The result obtained in this case was at that time very successful.

An interesting but unique subject was presented by Dr. Woolley on "The Relations of the Voice to Prosthetic Dentistry." While this seems to be a strange subject and apparently would have but little connection with artificial dentures, still if the fundamental principles of all that enters into the subject were studied and presented, it would make one of the most classic pieces of dental literature presented for many years.

One of the criticisms that I am going to offer to our work in this connection, and in the profession generally, is that we do not study and familiarize ourselves sufficiently with the subjects that we are going to present. The function of the voice is just as highly important, from a physiological standpoint, as any other subject that we could possibly present. But it is necessary to study the anatomical as well as the physiological structure and function of all the parts that enter into the process. Many of our professional friends might consider that there was but little in this subject worthy of study, but I want to say that since the presentation of Dr. Woolley's paper, I have here and there made some observations that warrant the statement that this is one of the phases of prosthesis that requires profound and deep study.

The profession of dentistry as a whole is too loose in its statements. For instance, not long since we had presented in a journal article the various methods of casting gold inlays, but no one was informed as to whom belonged the credit of these various methods. I simply take this as an illustration to show how imperfect our present literature will be to the future dentist.

Another subject that should be given more time and consideration is certain physiological changes and the treatment of cases of orthodontia, and other taxing operations at the period of adolescence. The mental and physical impulses of individuals at this period of life are easily affected by strain and irritation produced by a physical disturbance. There is no period in the human growth in which there may be more damage produced to the physical and mental condition of an individual than at this period of life. While we are studying the artistic and the mechanical devices for the regulation of teeth, we should also give our attention to the period at which children and young people should be subjected to these operations. While we study the mechanics of our profession, we should pause for a moment and study the physiological and pathological changes that take place in the tissues upon which we operate, and see if we cannot perfect the science of our calling. There has been but little study upon the changes of the alveolar ridge, as to the time of life when teeth are extracted. What difference is all of this to make with the use of artificial substitutes, provided the teeth are extracted early or later in the period of the individual?

While these questions have been alluded to many times, still our data is so imperfect and so poorly presented to the profession, that it is highly important that some one collect the subject matter and analyze the facts presented by various authors who have so imperfectly written upon these questions. The morphological comparisons of jaws before and after extraction of teeth, studied by simple microscopic observations is not sufficient, in my opinion, to give us the most profound knowledge of this important subject.

There is a phase of dentistry that should be studied very carefully by some one, and that is, what physiological changes in the human economy after the loss of the natural teeth and artificial dentures are placed in the mouth, and especially those cases in which the extraction has been performed in early or prior to middle life. It seems to me, from a comparative study, that we ought to determine, if possible, if the teeth of the human being have in some way a greater influence upon the foodstuff than the mere process of dividing the food, as is usually designated when discussing the problem.

If we viewed dentistry from a broad standpoint, it denotes not only that we must have a knowledge of certain anatomical and physiological changes that are produced, and that we should be able to comprehend the various kinds of knowledge in our profession, but that we must be able to make the best application of that knowledge to the alleviation of suffering humanity, as well as to repair injuries and to substitute lost parts.

We are constantly hearing the cry of various members of our profession for more accurate knowledge in this and that particular subject of dentistry, but we find only a very few who are capable of comprehending the fundamental principles that underlie that phase of their calling. As long as time lasts and dentistry is practiced and taught, there will be that same cry for more knowledge on the causation of disease processes in the oral cavity. When men leave the clinical field of their profession and start out to enlighten the profession on some of the biological phenomena of the causation of disease processes, they at once make it apparent that their knowledge of the subjects they are trying to discuss is so extremely limited, that they do not usually appeal to the scientists who are looking for causations of certain phenomena constantly manifesting themselves in living things. So our first duty, as members of the Odontological Society, is for each individual to try to teach others the fundamental problems that underlie each individual subject. Our societies and journal publications are full of generalities, and one of the most appalling things that characterizes dental publications of today is the lax methods which men have in making statements that are not logical, because they are not based upon scientific and well-observed facts.

While this discussion has drifted more or less into the groove of picking out the errors, I do so with a feeling that we really must get down to harder and to more solid foundation work, if we expect to call ourselves a true scientific profession. Medicine and dentistry have not kept up in applying the practical utilities of scientific investigations to the best needs of their calling. The practical side of dentistry is largely mechanical, but we do not utilize the scientific advantages that were offered to the profession many years ago by

Bonwill. A few men in our profession like Perry, Prothero and Roach, in our city, have tried to teach the scientific method, but I do not believe they themselves have sufficiently comprehended all the principles that lie out and beyond the mere discussion of the subject as presented by Bonwill. This great man before he could evolve this principle of practice, and method of teaching, had to study deep and thoughtfully the anatomical mechanism of both the higher and lower animal masticatory apparatus of the jaws. He also had to study the geometry that went with this anatomical apparatus, until he formulated one of the most essential doctrines that has been laid down in the field of prosthetic dentistry.

Practically all that we know of materials that are used in prosthesis is given to us by the journal advertisements, and not through long series of investigations by painstaking thinkers like Bonwill, Miller and Black, and many others whom we might mention. The aim of the age seems to be to get something new and forget the principles that are perhaps as old as time and have been relegated to the musum of antiquity, and especially if they happen to be two or three years old, forgetting as it were that we should study more closely all the known phenomena connected with all materials and all processes that enter into our professional life. I want to say here without fear of contradiction that the Odontological Society is not fulfilling the mission that its members are capable of accomplishing if they would only get down a little beneath the surface and study, first, physiology, comparative regional anatomy, chemistry that pertains to metals and all sorts of materials that enter into the prosthetic and operative side of our profession, chemistry pertaining to drugs as applied to the science of physiology, the scientific mechanics based upon mathematical problems, physics as applied to the sciences of mechanics, physics as applied to the science of chemistry, physics as applied to the sciences in general. And when we say physics we do not mean the elementary physics that are simply applied to high school or works pertaining to schools of that kind, but to physics out of which we can draw valuable information and apply to our own calling. It may not be very well known, but within the last fifteen years there has sprung into existence almost a new science, a branch occupying a place between physics and chemistry. I believe that some members of our profession and especially some of the younger men should study the work pertaining to this science, and review the works of men like Kaopp, Bunsen, Gladstone, Regnault, and other great founders of chemical science. A few years and the crowded moments of a student's life in dental colleges will be such as to make it impossible for him to become familiar with these great problems while in his school days. We should begin to build a literature that is complete in all of its details, with reference to these fundamental subjects in order that these young men may see that those who have preceded them have not only studied these sciences, but that they have made a lasting application of them to the profession of dentistry.

The science of physical chemistry today offers one of the most gigantic fields of research, and its application to dentistry will be one of the most lucrative subjects to do good that we could possibly bring into our work.

With these few rambling remarks, I leave the chair of the president of this association to one more ably and better qualified to keep the spirit of progress and the life of this association into the deepest and the most earnest work for the upbuilding of the cause that every true professional man should be endowed with.

I thank the association for the honor they have conferred upon me, and my last regret is that we have not accomplished more as a society in the fundamentals of our profession. These sentiments have so often fallen from my efforts to speak upon the profession in general, that I know they must be a source of more or less irritation to my brethren, but I do not intend these remarks as irritants but as simple, mild stimuli.

HAPPINESS.*

BY C. W. COX, D. D. S., BATAVIA, ILL.

I dislike to hear anyone offer excuses, and I dislike to apologize for anything I do, but on this occasion I must ask you to excuse my poor paper—I have only had two years in which to prepare this paper and I find two years is too short a time for me to write a good paper. So please bear with me patiently, and remember my specialty is not public speaking.

The two great illustrations of happiness which stand out most prominently before us today which have stood out before the people of many generations past, and which will no doubt stand out most prominently before the people of generations to come—are the two expressions "Happy as a king" and "Happy as a clam."

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* Read before the Northern Illinois Dental Society, October, 1907.

Why these two beings so far separated from each other physically, intellectually, and socially, should be held up before us in this day and generation as the two great symbols of perfect happiness, I do not know.

In my boyhood days that a king should be happy, I took as a matter of course. I could imagine him seated on his great, high, straight-backed throne, with his royal form enveloped in gorgeous purple robes, with a beautiful, well-made, twenty-two carat gold crown on his head, monarch of all he surveyed, with his subjects kneeling and bowing before him, with his slightest wish anticipated, "saying unto one Come, and he cometh, and unto another Go, and he goeth," and I suppose he must be happy, but even in my most boyish boyhood days I never could find, or imagine a reason for the clam's exquisite joy. I never could see why a clam should be any happier than an oyster, but you never hear "Happy as an oyster." It is "Dumb as an oyster," but "Happy as a clam." Now, I never heard a clam make any more noise than I have heard the oyster make, but there you are—tradition has passed its edict, and to say "Happy as an oyster" and "Dumb as a clam" would at least sound peculiar. And so I expect as in ages past, so in ages to come, the expressions of perfect happiness will continue to be "Happy as a king" and "Happy as a clam."

Although the king and the clam head the list of illustrations of happiness, there are many other expressions which are used to denote happiness in a more limited degree. We hear such exprssions as "Happy as a bird," "Happy as the day," "Happy as the flowers that bloom in May," and as the old negro minstrel expressed it—"I am just as happy as a big sunflower dat nods and bends in de breezes." (None but the oldest dentists are supposed to remember that song.)

You have all heard many other expressions used denoting some special degree of happiness, but I will venture to say, without any fear of contradiction, that not one person here ever heard any one express his happiness—whether it was the simple joy of health, and comfort, or grading up to the exquisite happiness of ecstatic bliss by saying he or she was as happy as a dentist. Now what is the matter with the dentist—it does not take much to make a dentist happy. I have seen many dentists who were happy to be alive. Some wise man has said riches do not bring happiness. If riches bring unhappiness, however, that will be one thing the dentist in his strife for happiness will never have to contend with.

A man to be considered rich nowadays must be worth at least one million dollars. Did you ever figure out how long it would take a dentist to earn one million dollars at the actual practice of dentistry? I will give you an illustration of a dentist getting rich, and I will be liberal with the dentist.

We will suppose a young man graduates from a dental college the day he is twenty-one years old. The next morning he reaches his well-fitted office at eight o'clock, puts on his office coat and begins to accumlate a vast fortune. The first hour he is in his office he performs ten dollars worth of dental operations, the next hour the same, and so on, during the day. He works eight hours each day, and is sure to get his pay; so when five o'clock p. m. arrives he walks home with eight nice ten dollar bills folded up in a nice smooth bunch in his inside pocket, and he feels elated and happy at his prospects. He has every hour filled in during the week and finds at the end of the week he has accumulated four hundred and eighty dollars, and I think that most of you here will acknowledge that the young man is doing business. He is industrious and cares nothing for the pleasures of life. Dentistry is his joy and from the practice of it and the accumulation of money he derives all his happiness, and at the end of his first year he finds he has had a practice of twenty-four thousand nine hundred and sixty dollars. He keeps up this pace year in and year out, and after forty years of it he wakes in the morning and finds that he is sixty-one years and one day old and in all that time, without one day's sickness, without one day's vacation, he has failed to perform one million dollars' worth of dental work, and has not paid his board and dental dealers. When these bills are paid, especially the dental dealers, he will find he is very far short of being a millionaire. He will find he has gained but little more headway toward the million mark than when he stepped so blithely to his office the first morning after becoming a dentist. No, a dentist will not be handicapped with riches in his pursuit of happiness.

The Bible says it is easier for a camel to go through the eye of a needle than for a rich man to enter the kingdom of heaven. If riches were all that kept mankind from entering the pearly gates, dentists could get through as easily as a camel can pass between the pyramids of Egypt.

Happiness in this world is extremely elusive. Every person pursues it from the time he is born to the day he dies, and every one at some times or other has found it. No one ever was born under such adverse circumstances as to be able to say he or she had never experienced one moment of happiness. Happiness is everywhere. It is an ethereal something which is diffused through the world almost as abundantly as the air we breathe. It is not given to mankind alone, but all the animal kingdom enjoy it. You can hardly think of an animal so low down the scale that it does not show positive signs of being happy at some time or other, and I believe the sensation is the same whether it causes the king's heart to pulsate the faster for the joy he feels, or the clam's flabby inside to tingle anew as he delves in a softer bit of mud. We are so adjusted that happiness comes to all according to our surroundings, or environment. The happiness or joys of a dentist would not appeal to a king, nor a clam either for that matter, nor to a lawyer, or preacher, or carpenter, or mason.

We as a class are alone in the world. The world at large knows nothing of our sorrows or our joys. Of curse, I mean in our business or professional capacities. In social and domestic life we experience the same delights, joys and sorrows as men in other professions and callings.

Have we anything to cause us happiness in the actual practice of dentistry? I think we have as many reasons for being happy as men engaged in any business, calling or profession I know of.

Now most people think happiness and goodness mean about the same thing, but this is not so. Success in almost any undertaking brings with it a certain amount of happiness, but then you know there is such a thing as a successful horsethief, and I have no doubt when successful in this somewhat dangerous calling the horsethief is thrilled with happiness—and I am sorry to say there are horsethieves, or worse, who claim to be practicing dentistry; men who by flaring advertisements, telling of the wonders they perform, deceive people into patronizing them when they deliberately steal their money. Yes, they are worse than horsethieves—for the horsethief runs many chances of being caught and punished, but the lying, advertising dentist takes few chances of being punished as he should be. But even he, I expect, derives much happiness where he is successful, and success with him means the amount of money he can transfer from his dupes' pockets into his own in the shortest time. They degrade the dental profession and the happiness they derive from their wicked business would make an honest man sick, but it causes me great happiness to say such dentists are so far in the minority that they are scarcely worth considering (notwithstanding the great amount of noise they make), when compared with the vast majority of honest, conscientious men, who are engaged in the practice of our chosen profession, whose only motto is, "My patients' welfare"—and for these dentists I am sure there is always an abiding happiness in the actual every day practice of dentistry. The dentist of today is made happy in the fact that dentistry has reached so near a state of perfection that his diagnosis and prognosis of almost every disease of the teeth will be sure and certain. He can tell his patient precisely what he can do in a given case, and then can go ahead, with the completed operation in his mind's eye as accurately as the architect can see the building he is planning in its completed state, from the plans he has drawn. That was something the dentist of a few years ago could not do. He had the same difficulties to overcome as the dentist of today, without the facilities or knowledge to overcome them, and in many of his operations he was groping in the dark, vainly trying in most round about ways to accomplish something, where he could but guess what the results would be.

It causes the dentists of today great happiness to feel sure those days are past. To know that scientific men belonging to their profession have with untiring energy blazed the way through the forest of uncertainty, and have left a path that all may follow who have energy enough to do so—a path that leads by easier methods to surer success.

To these brave men who have striven so hard and have given the profession at large the product of their labor, without recompense of any kind, is due the greatest gratitude and esteem of every dentist today, but many have striven and many have given, and it would be utterly impossible to call them all by name, and all dentists who have belonged to dental societies for any length of time have become so imbued with the fraternal feeling which the society creates, that they are not only willing, but anxious, to tell each other all about the discoveries they have made, and the only regret they have is that they have not discovered more, for most of them feel they have received more than they have given, and here comes another Bible truism, "Unto him that hath shall be given," and I think we could go on for the benefit of the non-ethical and non-member of dental societies and quote the rest of the verse and say, "And unto him that hath not, even that which he hath shall be taken away."

It causes me happiness right now to be reading this paper here in the city of Rockford, which is noted the country over as having the most fraternal and harmonious lot of dentists who were ever gotten together in any one city in the world. They spend their vacations together, eat together, sleep together, and when it comes to a pinch they will fight each other, or fight for each other, just like a lot of genuine brothers, and that is the way it should be in every other town, and I am extremely happy to say that is the way it is in our town. We dentists are glad to meet each other, belong to the same club and societies, and I am sure there is not the least jealous or unkind feeling existing between any of us. As we meet on the street corners, or get together in a nook at the club, it is quite a common thing to hear someone say, "Well, what is going on here? Are you fellows forming a trust?" But the person who makes these remarks thinks more of us, and of the dental profession in geenral than he did before, and it is a source of happiness to me that dentists the country over have become such good friends.

There are no silly secrets in dentistry today, and that is one of the greatest reasons for the progress dentistry has made. All true dentists are working together for the common good, not for themselves alone, but for their patients' benefit, constantly endeavoring to do better work by shorter methods and eliminating pain by every possible means, and our services are being appreciated, and the people in general have learned, or are rapidly learning that a frequent visit to the dentist saves them pain, trouble and expense, and saves their teeth besides. I have sometimes almost wished that the loss of a tooth meant sure death. What important people dentists then would be. Everyone then who had the slightest idea that anything could be wrong with his or her teeth would visit the dentist, and then it would be so easy for the dentist to fill the little, superficial cavities he would find and so easy for the patient to have it done, that visiting the dentist would become a pleasure and a pasttime instead of a nightmare of misery. And every adult person then would have thirty-two teeth, a most uncommon sight to see.

But it causes me happiness to know that all dentists are telling their patients all about these things, and are telling them what to do to keep the teeth, the gums, and oral cavity in general, in a healthy condition, and with all this talking, and all this preaching by all the dentists of this country, I believe in the near future we will have a race of people who would consider themselves maimed for life if a tooth should be lost, and then I believe with a race of people, each with thirty-two good teeth we will enter upon a period of longevity, of physical development and of mental power the world has never known.

Personally, I am happy that I am a dentist. I am happy that my son chose dentistry for his life's work and is now a graduate of the Chicago College of Dental Surgery. It caused me great happiness to see Dr. Brophy hand him his diploma at the graduating exercises last May. My son was glad to pass his examinations and to receive his diploma, but he did not seem to show the exultation I expected, and I said to him, "Are you not glad and happy to have received that degree of D. D. S. from one of the best dental colleges in the world"? He said, "Yes, of course I am glad I passed, but I am thinking of that State Board."

He spent a week of misery taking the State Board examination and when he had been enduring it for about three days, he wrote me and said, "Well, dad, I am up against it. I guess it is all off with me, this State Board business is something fierce." I wrote and told him to cheer up. I told him I was personally acquainted with Dr. Reid and Dr. Pruyn, and I felt sure they would not ask of him any more than he ought to be able to endure. But when he showed me the list of questions he was expected to answer and told me of the operations he was required to perform, I must say I did not blame him for thinking it was "the limit."

Well now talking about happiness, that son of mine, as conservative as he is and as hard as it is to get him to express himself so as to know whether he is happy or sorry, I must say there was no doubt about his feelings when he received his license from the State Board. He jumped up and down with delight and shook his license before my face and said, "Well, dad, old boy, what do you think of that? Isn't that going some"? And I could only say with tears in my eyes, "Yes, kid, I think it is."

Well now what I am getting at is this: that beautifully engraved diploma and that State Board license, which by the way is not much to look at, is bestowed upon my son, and what does it show? It shows he knows enough to practice dentistry in the great state of Illinois. At the minute I am writing these words he is visiting in Richmond, Illinois. Richmond is one mile from the state line dividing the great state of Illinois from the great state of Wisconsin. As long as my son stays in Richmond he is a professional gentleman and he can practice his profession, if he sees fit to do so, without let, or hindrance, but suppose some friend of his in Genoa Junction, only one mile and one-half away, should need his services. (Genoa Junction is in Wisconsin.) Could my son be of service to him? No, not without breaking the laws of Wisconsin. If my son, or if I, myself, or if Dr. Reid, or Dr. Pruyn, or Dr. Brophy, or any of the rest of you Illinois dentists should step across that line and should relieve pain by opening a tooth with a putrescent pulp, or would even venture so far as to extract a tooth which was causing excruciating pain, you would be breaking the law—you would be practicing dentistry without a license; in other words, in Illinois you are a gentleman and a scholar, but in Wisconsin you are a vagabond, and could be arrested as such, having no visible means of support. I do not think this is right. If I know enough to practice dentistry in the great state of Illinois, I think I know enough to practice dentistry in any city, town, village or hamlet in this world. Why it seems almost preposterous to think that any dentist in good standing in the great state of Illinois could be arrested in Tombstone, Arizona, for practicing his profession, for doing the work he had striven so hard to be competent in; but such is the case. There are more people in Chicago today, let alone the rest of the state of Illinois, than are contained in North Dakota, South Dakota, Idaho, Colorado and Arizona, all put together, but still they have it in their power to tell you and me that we do not know enough to follow our avocation when we cross their state borders, and before we can treat diseases of the teeth and oral cavity, we must go before a State Board of dental examiners and submit to questions which we had known and forgotten before our inquisitors were born. Those things are not right. Politically, I am a republican, but I am democratic enough to believe in reciprocity of all nations, and most assuredly I believe in reciprocity of states when it comes to the practice of dentistry. I will be exceedingly happy when the dental laws of different states are so adjusted that a dentist who is capable of practicing dentistry in one state will be deemed proficient enough to practice his profession in any state in the union. I believe this day will soon arrive. I think medical men and dentists have procured rather more law than they know what to do with, but with a little study of the questions before us we will reach more desirable results.

In later years I have spent many happy hours in inserting gold fillings with the more recent preparations of gold. Difficult cavities, which a few years ago would have been almost impossible for me to fill, are now rendered easy and I feel a happiness in my work and a certainty of success which I did not have in years gone by. The blind abscess and putrescent pulp which have always been the bane of my existence have now become a source of joy to me, and the more blind they are, and the worse they smell, the surer I am of success, thanks to Dr. Buckley's formo-cresol remedy. Many tedious hours have been relieved and happiness has been promoted by this scientific treatment. Pressure anesthesia has made many hours of my life easier and has caused me many moments of amazement and happiness. There are many other sources of happiness the dentist of today enjoys, which I intended to mention, but as I find my paper is becoming longer than I expected, I will cause you all happiness by drawing it to an end as quickly as possible.

In conclusion let me say, I honestly believe if in some miraculous manner I should become possessed of many millions of dollars, so rich indeed that I could do exactly as I wished, the pleasures of life which money can buy would many times become monotonous to me, and that dentistry with me has become such a habit that somewhere in some corner of some villa or palace of mine I would need to have a thoroughly equipped dental office and laboratory, where I could retire from the supposed pleasures of the world, and could be real happy once again in the practice of dentistry. And I really believe in the practice of dentistry under such circumstances I would be happier than any king, or indeed any clam.

SPECIFIC REMEDIES.

BY J. P. BUCKLEY, D. D. S., CHICAGO.

[Some contributions of drugs recommended in a practical talk before the Northern Illinois Dental Society, October, 1907.]

Modified phenol.

℞

Menthol	ʒ j
Thymol	ʒ ij
Phenol	ʒiij

M. Sig. As directed.

Modified Talbot's Mixture.

℞

Zinc iodid	grs XV
Aqua	m X
Iodin	grs XXV
Glycerin	ʒj

M. Sig. As suggested.

℞

Orthoform.

Europhen .... a a ʒj

Liquid petroleum to make thin paste.

M. Sig. Abrasions or pain after extractions.

Spray for prophylaxis and pyorrhea.

℞

Zinc sulphocarbolate	ʒ ij
Alcohol	ʒ ij
Aqua cinnamon	q. s. f ℥viij

M. Sig. Use as spray. If too astringent dilute with warm water.

CASTING A GOLD COPE FOR DETACHED POST CROWNS.

BY ARTHUR G. SMITH, D. M. D., PEORIA, ILL.

Perhaps no operation that is done by the dentist of average skill has produced more pleasure and satisfaction to the patient (at the time of its performance) than that of cutting off a badly decayed and broken down anterior tooth and substituting therefor a detached post crown of some standard manufacture. The reasons for this are several: The operation is neither tedious nor painful; it is performed without the use of the hated "rubber dam"; the cost is not excessive and the result, judged from the ocular standpoint of the patient, is a tooth that looks "as good as new."

So much for the bright side of the picture. Those who have done these operations know what is on the back of the canvas. Know of the utter inability of anybody to make a perfect joint directly between porcelain and root end by any possible process of grinding. Know of roots that have split from end to end like pieces of straight grained pine, of decay that creeps in at the cervical margin causing a leak that makes it necessary to begin a series of half-hearted and half-done patch work operations with cement or that friend of the last ditch, gutta percha! I need go no further into the dismal picture. All too well are the weak points of this particular operation known to every intelligent dentist.

For the elimination of these glaring defects that have heretofore inhered in this operation of the "ready to set" porcelain crown, I offer the following plan of operative procedure: Fill root canal and enlarge it for reception of post supplied with crown, quite in the usual manner. If end of root is sound grind it carefully and evenly just under the gingival margin. If at any point decay extends rootwise under the gum, excavate thoroughly with a sharp bur. The resulting inequality in the end of the root will be perfectly taken care of when the cope is made. Now grind the porcelain crown to an approximate fit (I pass over the fact that no man ever ground a porcelain crown to any other kind of a fit on a tooth root no matter what he may have thought he was accomplishing at the time he did the work). See that the post is left sufficiently long to prevent the crown from quite touching the end of the root at any point. Let the space between porcelain and root end be from ½ to 1 millimeter (or say the thickness of a card or piece of blotting paper). Lay crown and post aside and take a small piece of warm inlay wax and without drying the parts, press it gently against the end of the root. Hold it lightly in position with the left hand and with the right steadily press post and crown to position, of course forcing the post entirely through the wax and up the enlarged root canal and pressing the base of the crown into the soft wax. As a result of this step the wax will be spread out in a somewhat irregular ring all about the gingival margin and base of the crown. Now while the wax is still soft and mobile make sure that position, alignment and occlusion of crown are all exactly as you want them in the finished work, then chill the wax and with a small sharp lancet trim away most of its excess from root end and crown base. Now remove crown only, leaving wax and post in position and while they are thus in position, take a small warm burnisher or other instrument and melt the wax immediately around the post so as to tack wax and post together; replace crown and press firmly to exact position to prove that there has been no distortion of the wax as a whole. Then again remove crown and chill the wax. Now grasp protruding end of post firmly with pliers and by a straight pull bring away post and wax together without distortion or disturbing their relations. Now thoroughly chill the wax cope and holding the root end of the post in the left hand, with crown end of post pointing upward, drop the porcelain crown in position on the wax cope. If the work has been carefully done the base of crown will fit the cope exactly at every point. If it fails to do this, take a new piece of wax and begin all over again as there will probably not be wax enough now left in the imperfect cope to make a proper fit.

Now comes the nicest part of the whole procedure, for with the crown in position on the wax cope, you can grasp crown and post firmly between thumb and finger of the left hand letting occlusal edge of crown rest on thumb and tip of post against first finger. The final trimming of the wax cope can now be done in a moment's time and with perfect ease and safety as the outline of the root shows plainly in the upper part of the wax (showing exactly where to trim on the root side) and the crown itself in position stiffens the wax and also prevents any possible excess of trimming on the crown side. Needless to say, however, this final trimming of the wax cope to exact shape should be done with the utmost care and a sharp lancet while the cutting strokes should be toward the porcelain rather than away from it. It remains now only to lay aside the porcelain crown (don't remove the post from the wax) and attach a sprue wire at the most convenient point on the wax and proceed with the investment and casting exactly as for a regular gold inlay. After casting, the cope will require almost no further work save cutting off the sprue and when crown and finished cope are placed in position on the root, they will be found to fit absolutely and to be perfectly rigid and immovable in the identical position and relation to surrounding parts that they were intended to occupy. Cement to place as usual.

This method of crowning has many good points. It enables a man of ordinary ability to obtain an extraordinarily good result. It increases neither the time of the operation or its discomfort to the patient. An irregularly shaped or partially decayed root is crowned with almost the same ease as one sound and regular. There is no band to break the continuity of the root surface and cause recession and irritation of the gum margin, yet the root is protected against both decay and fracture in a way hardly possible by any other method and that without showing more than a line of gold. Finally if the porcelain is accidentally shattered the root with its heavy solid gold cope is ready to receive a new porcelain superstructure at a minimum of trouble to the dentist or expense to the patient.

RETIRING PRESIDENT'S ADDRESS.*

BY R. L. GRABER, D. D. S., PEORIA, ILL.

The time has come when the duty devolves upon me, through custom, and without regard to my ability, to read an annual message to this society.

I wish first to thank all the officers and committee-men of the society for their hearty co-operation during the past year, in all matters of interest and benefit to the organization.

I wish, too, to thank the members who have been faithful in attending the meetings. Those who come to hear and learn are as necessary, for successful meetings, as those who come to impart and demonstrate. Without them our society would not exist. The world is made up of three kinds of people, those who lead, those who follow, and those who do neither. It is possible for those who follow to become leaders, but the last named never can.

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*Read before the Peoria County Dental Society, January, 1908.

What are we trying to accomplish in our society? The aim of society work is to offer for consideration and discussion, the ideas of its combined membership; to make common property the advantage derived from individual experience; from every advance to derive cheer and to increase good fellowship. We are trying in truth to help one another, that each may be better able to help himself, for the more able a man is to help himself, the better he can help others. It has been truly said, "What does it avail a man to know a thing if he cannot impart his knowledge to another."

It is well known that theories and speculations are, in themselves, of little value unless put into practice. It has been said that "a theory is like a ship without a rudder; it may land, and it may not." So for the mind to keep its course, it must be guided by the light of reason based on fact. Theories may be indulged in only so long as they are based on facts, to which we may go back at all times and know that we are on solid ground. H. W. Mabie says: "Every art has its own method of training, its distinctive discipline, its secrets of experience and skill, and mastery depends upon practice of these methods, submission to this discipline, possession of the fruits of this experience, and command of this skill. Between the untrained man and the artist in every department of creative work there must be an educational process severe and prolonged." This educational process, it is, gentlemen, that hammers our knowledge into shape; that gives us opportunity to prove our theories by actual practice. It is this process that distinguishes the trained man from the untrained, and the extent and thoroughness of its discipline that differentiates the skilled man from the less skilled. "Great men are more distinguished by range and extent, than by originality." We too often hear the expression, "there is nothing original about me," "I possess no originality," etc. But remember, gentlemen, that if we require the originality which consists in "finding clay, making bricks and building the house," very few men are original.

In professional, as well as all other lines, it seems to me, too many fancy that getting on well is the result of luck. They forget that one must be determined and persevering; that one must develop and cultivate his latent faculties. Is the successful man born successful? No. He is born with a very ordinary amount of skill and ability, and a strong faculty for observing and persevering; he must either have originally or cultivate tact, sympathy, honesty, cleanliness, promptness, close attention to details, and all around fair and square dealing.

A good way for those to proceed who are lacking in perseverance, is to take rather short views and accomplish each day's task as it comes; to overcome the obstacle nearest at hand and let the future with its problems take care of itself, remembering at all times that, "When the toiler or the artist ceases to put his soul into his work, the work becomes defective."

The doctrine of evolution shows that there is continued strife, and that the unfit are being constantly eliminated. The sharper intellects prey upon the weaker. Disturbances of the times are not to be wondered at. They are the result of the struggle, man to man, for existence. This fierce competition gives rise, from the side of the weaker, to the demand for equality; equal rights to all; but could such a condition of equality be established, how long would it maintain? It would be but a question of time, and that brief, until those who are stronger, those who are better prepared, will have climbed, by the aid of the weaker, to a point of ascendency over him. We can demand equal opportunities for all, but an unerring law of nature will reward every man according to his work. It is not possible to control the human mind, or the human energies within a limit. "The wheels of tendency will not stop, nor will all the forces of inertia, fear, or love itself, hold them there: on and forever onward."

We ourselves are tendencies, or rather symptoms, and none of us complete: we touch and go. Rotation is the law of nature. The world has never been alike any two successive days from the time its foundations were laid to the present moment. It seems to be a fundamental law of all life and growth, as well as all death and decay, that there shall be constant change. There is no such thing as rest, in nature. The smallest atoms and molecules are in constant agitation. In the animal world, as well as the vegetable, there is a period of life and growth, and a period of death and decay, and this seems to be the destiny of even the planets themselves, as well as of the things that live and grow upon them. Still, with all this turmoil, nothing is ever lost, but only undergoing one eternal round of change. We must get in step and maintain the pace, if we would keep abreast with this constant, onward march of humanity. Death itself is an essential part of the cycle of change. It is the inseparable companion of life. It is the way of return and continuance. Death returns to life and life returns to death. Death is necessary for life and life is necessary for death.

"In life the supreme test of man is service." His genius is great; if he will, he can lift the vail that shrouds the mysteries of nature and bring himself into very touch with the mind of the infinite. He can, if he will, interpret his thought through the medium of natural law, and lo! a new product, a new method, a new system."

How much life would have been robbed of its charm and interest, if all these things had been worked out for us from the beginning. There is no interest so absorbing, nor pleasure so keen, as that of pursuit, when the pursuer is reaching out after the hidden things that are locked up in nature's great storehouse. From time to time she yields up her secrets, little by little, to encourage those who love her, and those who work not alone for the pleasure of getting, but as well, for the highest and best good of their fellowmen.

PROCEEDINGS OF SOCIETIES.

CHICAGO—ODONTOGRAPHIC SOCIETY.

The regular meeting of the Chicago-Odontographic Society was held in the Chicago Public Library Building on Tuesday evening, November 19, 1907, at 7:45 p. m.

The President of the Society, Dr. F. E. Roach, occupied the chair.

Dr. J. H. Prothero read a paper entitled: "Anatomic Occlusion of Artificial Teeth."

DISCUSSION.

Dr. H. J. Goslee:

While I never like to start a discussion by complimenting the essayist, I am nevertheless confronted with the necessity of doing it in this instance with all the vigor at my command.

Dr. Prothero has given us the composite of the work of Drs. Snow, Walker, Pullen, Davis, and many others.

I regret the fact that I received this paper at so late an hour today that all I had time to do was to read it over. Nothing would have pleased me better than to have had some time to study it.

I think the most valuable thing in the paper is what Dr. Prothero pointed out to us as Dr. Christianson's achievement, and being able to measure and register the condyle movements and condyle plane. That will enable us to arrange artificial teeth for the edentulous mouth without the extreme amount of grinding recommended by Dr. Bonwill in his system, and yet with the same results. You remember, those of you who have made any study of Dr. Bonwill's system, that it became necessary to grind teeth almost beyond the semblance of teeth. By this method of registering the condyle plane we are enabled to accomplish a more exact result in so far as the relationship of the denture is concerned without an extreme amount of grinding, thus enabling us to make the patient's occlusal surface conform to artificial teeth, which, I think you will all agree, will accomplish the purpose very much better than this grinding all to pieces as was formerly necessary.

I agree with the paper from beginning to end, and I will point out to you the substance of the whole paper, which is contained in the last two paragraphs. If you permit me I will read them.

"I am convinced that a system of anatomical occlusion of artificial teeth is now logical, practicable, and capable of every-day application, particularly since the last gap has been filled in such a simple and practical manner."

"I refer to Christianson's method of measuring the condyle plane. With each one now it is only a question of securing the proper appliances and working out the details in a practicable manner."

I wish I had the ability that Dr. Snow of Buffalo and Dr. Prothero have in applying the face bow. I obtained one of them when they first came out, and I practiced with it as industriously as I had the time, but I have never been able to obtain the same results that Dr. Prothero has. I am telling you this, not to discourage you, but rather to encourage you, because I believe now, after hearing what Dr. Prothero has to say, that perhaps I can begin over again and learn to use it in the practical manner that he does, and particularly now that we have something that will guide us in measuring and registering the condyle plane as he has mentioned. I feel safe in saying that he who earnestly and sincerely makes an attempt along the lines mentioned cannot fail to see the utility as well as the simplicity of the method.

With Dr. Prothero and many other teachers of prosthetic dentistry, I have maintained for years that we have absolutely no use for the plane line articulator. It only gives us that one hinge-like movement. It opens and closes like a pair of shears, and nothing more. We know, if we hope to place in the mouths of our patients an apparatus which will enable them to masticate the food properly, we must give them more movement than that. Dr. Prothero claims that he uses an articulator that accurately measures the mandible. I do not know which one he uses. I have tried them all and I have not found any of them that will, in my hands at least, do that. But that is not the point. If we acknowledge that we cannot use the plane line articular because of the fact that it is almost impossible to obtain what the requirements demand in our work, then let us use the next best thing, the nearest approach to that which will mimic the mandibular movements, and whether those occluding frames or articulators mimic the mandibular movements exactly or not is not the question. They are a closer approach to it than the plane line articulator, and therefore an improvement upon that, and it is our duty to employ that which will insure better results than we could obtain by former methods. Whether we use any one of the various anatomical articulators, we must not expect to be able to construct dentures for the edentulous mouth, and have them work in the mouth as they did in the articulator. They won't do it. Work as hard as we may to get the dentures as accurate as possible, I believe when we put them in the mouth we will still find work to do. We should never dismiss the patient until every possible movement in occlusion has been observed. and until we have obtained the three-point contact or diverging contact of the different surfaces which will prevent displacement. From a theoretical and scientific standpoint, I believe that everything Dr. Prothero has told us is orthodox. Whether it is practicable or not remains for us to find out.

Dr. E. J. Perry:

The importance of this question to the prosthetist is beyond doubt paramount to any other if he would succeed. Can there be a more reasonable proposition made to the prosthetist than that he arrange his dentures anatomically? You men who do not do this deny to your patients a service they have a right to expect of you. You are having failures where you might have success. I say failure because a denture not arranged anatomically is a failure for the reason that while the denture may be worn with some comfort and be of some use under favorable conditions, it is nevertheless a failure because it falls so far below what it might be if it had been arranged with reference to its anatomical uses. An artificial denture is worn and used anatomically. The muscles of mastication, the cheeks, lips and tongue are all concerned in the operation of the denture. Now, if it is not arranged with reference to the surroundings, how can it work anatomically?

The great question is, how can this be done? Can we do it? It does not matter whether Dr. Prothero can do it, we want to do it. Any system is worth nothing that the average man cannot use. If you want to lift up the standard of prosthesis, you must bring it within the reach of the average man. My first experience in the use of the articulator was a plaster of paris frame and next the plane line in common use, and for a great many years I have used the anatomical articulator. It is not a difficult matter to pick out those who are using artificial teeth not anatomically arranged. The muscles operating those dentures are accommodating themselves to this abnormal position, only a hinge-like movement of the jaw being possible. The cheek, lips and tongue are busy. The face itself acquires mannerisms, and the fact that the person is laboring with an unscientific and cumbersome device is evident to all, while all this disappears when a person is wearing a denture whose surfaces are so arranged that the upper jaw mandible operates anatomically. The occluding frame to be anatomical must mimic the movement of the mandible. This the plane line articulator does not do, nor can the patient operate the teeth as the plane line articulator does, because the lower jaw cannot make the movements made by this articulator, and the common strap hinge would do as well. The best occluding frame, of course, is the jaw itself. You cannot arrange the teeth, grind them, and so forth in the mouth, so we must have a frame which will give us all the motions of the lower jaw, so that we can dispose of the grinding surfaces in a way to give the mandible all its peculiar movements.

I have used the Bonwill articulator, or, to please Dr. Prothero and to be more in keeping with the scientific expression, "occluding frame," for a number of years. I long since became convinced that if I arranged the teeth in the laboratory or arranged the occluding surfaces of the teeth in the laboratory, I wanted to go back to the mouth and feel that, while I had done the work in the laboratory, it was reproduced in the mouth. I did not know any way of doing it. The plaster occluding frame did not do it. The plane line articulator or occluding frame did not do it, and, lo and behold! I found that the anatomical articulator of the celebrated Bonwill does not do it always. It does it sometimes, and I want to confirm what Dr. Prothero has said in regard to this matter. Why is it that many of my cases of full dentures, when I have articulated them with all the pains and care possible, using the equilateral triangle in arranging models, when I come to put them in the mouth, do not operate the same? This is true of quite a reasonably large percentage of them. Why is this? Because I had not got on to that "path" business. That must be the "straight and narrow path" or I would certainly have been in it. [Laughter.]

The thing that Dr. Prothero has brought us that is new to me—and he has made an absolutely scientific and concise statement of it—is that he is able to place these models in the occluding frame where they belong. Personally, I am under very deep obligations to him for working this out, and I think the Society is to be congratulated upon the presentation of this paper. Nothing like it has ever been offered to a dental audience anywhere in the world at any time.

Dr. T. W. Pritchett, of Whitehall, Ill.:

Following the discovery and application of vulcanite in the construction of artificial dentures there grew such a great demand for the block or gum sectional forms of teeth that in the minds of the profession and public so-called permanent dentures were not considered acceptable and up-to-date unless such teeth were selected. Plain individual forms were generally considered admissible only as temporary makeshifts until complete absorption of the bony tissue had taken place, preparatory to the insertion of gum sections, for esthetic considerations mainly. The question of selection was more conventional as to looks than all other consideration until Bonwill in 1885 published his revolutionary and iconoclastic views, subordinating everything to the occluding surfaces in denture construction. So radical was he in his statement that he declared it permissible to turn teeth end for end, flatwise, or any way that would promote the greatest efficiency of masticating power. I attribute this statement to his intensely exuberant enthusiasm in breaking down all conventionality in the selection of teeth in order to individualize every tooth to the performance of some important function in the drama of mastication.

His statements and logic appealed so strongly to my imagination and reason that I began at once to conform my practice in accordance therewith. Following are some of the reasons and personal methods in confirming my belief that Bonwill was the first great master:

Make plaster casts from impression taken from a typical set of unworn natural teeth, and remove the bicuspids and molars on one side (both upper and lower), substitute artificial teeth instead, ground according to Bonwill, then note the difference in occlusion of the two sides. Note the absence of the cutting or shearing quality of the occluding surfaces of the natural bicuspids and molars in their mesiodistal relations as nature forms them. All points of contact being either pointed or rounded, and it will be apparent that the cutting force must be very limited upon such surfaces. We know that by continued use of the natural teeth these surfaces change form very materially by wear and accommodation, often greatly to the advantage of the individual in producing ideal mastication, because of the grinding possibilities effected by the flattening of the cusps and sharpened peripheral margins. This change of form of the occluding surfaces obviously permits a greater range of movement of the mandible when in action—presenting larger areas of potential working surface than is seen in the case of a deep interdigitating arrangement of dentures either natural or artificial. This to our mind is the keynote to Bonwill's method of articulating surfaces.

Artificial teeth as they come to us from the manufacturer are beautiful duplications of the forms and likeness of unworn natural teeth, and selections can be made that will fulfill all the requirements so far as looks are concerned. Such teeth can be arranged upon casts so as to simulate labially, lingually, buccally, and proximally almost any type of restoration desired.

Occlusally (with a few exceptions) the bicuspids and molars (the working parts), if arranged without any change or modification of form, can result only in the coming together of surfaces pointed or rounded, or both—small in area, few in number—and are therefore deficient in reducing power, the grinding force being essentially if not altogether eliminated.

We have already said the natural teeth may wear and accommodate themselves to a better adjustment for efficient service, but artificial teeth never do. The porcelain does not wear, and there is no accommodating movment.

As I interpret Bonwill, his predominant idea was to give a part of the occluding surfaces a cutting or shearing quality, without detriment to other forces, as grinding, crushing, and all the forces that can be employed in the combination to perform the act of mastication, thus making up for the loss of power, when sustained only by pressure upon the mucous membrane by plates, instead of nature's plan of roots deeply imbedded in the jaws. Hence, his plan of grinding the occlusal surfaces of bicuspids and molars mesio-distally in such way as to secure a longer line of close contact in the "line of occlusion," buccally and lingually, and at the same time securing a wider range of movement of the lower jaw, making it possible to secure several places of balancing contact within its zone of movement. The ridge elevations are so strongly defined upon the most of our artificial teeth that they are obstructive to the objects just described, i. e., increase of area of surface and liberty of lateral and forward movement without losing supporting balance on both sides of the jaws.

The simplicity of the remedy seems to be the wonder of it. Clear away the obstructions within the area of the contact zone—and the thing is done. I have dwelt mainly upon the mechanical shaping of the occluding surfaces to obtain the best masticating results. I am now convinced that our common failure has been a want of means of recording the movements of the lower jaw in the glenoid fossae, so that we may approximately conform our teeth to meet its peculiar variations.

"The missing link in the chain of our future success" has been so elaborately and convincingly welded into our minds and consciousness by the exposition given by Dr. Prothero tonight that there is no longer a valid excuse for any dentist failing to provide himself with the best means of securing such equipment as will enable him to remove in part the stigma of failure that now rests so heavily upon the dental profession in the science and art of constructing useful dentures to supply lost dental organs.

For myself, I go hence determined to fight the black beast of failure with more enthusiasm and confidence of success than at any former period in my lifetime.

Dr. Dinwiddie:

The principles involved in this paper by Dr. Prothero have been in use in my office for many years, and I can truly say that they can be put in practice to the great advantage of all dentists. If I can produce results by the use of this articulator, I know that you all can.

Dr. B. J. Cigrand:

I wish to add my testimony to the effort that Dr. Prothero has made to place the prosthetic ideals of the anatomical arrangement of teeth on a scientific basis. While I commend him most heartily on what he has done, I also would like to direct your attention to the fact that Dr. Bonwill gave practically most of his professional life to this theory. It remained, however, for Dr. Ottolengui, of New York, to bring the matter before the profession. Dr. Bonwill labored for years in the effort to get an audience of dentists. This he told me himself, and I had the pleasure of learning his system from him. When men like Dr. Bonwill labor for years and years to get the ear of the profession, no wonder it is somewhat difficult today. This paper will accomplish more as time passes. There is not a person present here tonight—not a single one—who can thoroughly understand everything in the paper.

Let me say one thing in regard to the anatomical arrangement and relation of the teeth in the mouth. I believe the anatomical articulator bears the same relation to artistic and scientific dentistry that the pantograph does to the artist. I believe it is only the foundation for it; that it is simply that upon which he must build. There will never be an articulator, it seems to me, which will absolutely mimic each and every jaw in its varied forms, because the condyles move differently in nearly all mouths. It then remains for the dentist to be a scientist and use the articulator as a foundation as the artist uses the pantograph to hastily draw different lines to save time. From that point on the artist puts in his life, and from that point on the dentist must put in his work.

Dr. Prothero was careful to say it would not in all instances be satisfactory—that is, absolutely so. The diagram that he exhibited shows that he knows very well no machine will mimic all jaws, and for that reason he said some movements of the jaw would be surprising if they were placed on the screen and shown to us.

Dr. Prothero in closing the discussion said:

Dr. Goslee mentioned the difficulty met with in using the face bow. It is difficult to adjust at first on account of its tendency to displacement in tightening the clamp-nut. Anyone, however, with a little persistence can soon adapt it accurately and get results that are both pleasing and satisfactory.

I would like to sum up briefly three points brought out in the paper, viz.: First, the bite is taken by using pressure on the point of the chin, and when the correct relation of the lower to the upper jaw is established the base-plates are secured by means of the four-pointed staples. Second, the face bow is not designed to assist in taking the bite, but is intended to measure or register the relation of the alveolar planes to the glenoid fossae. When properly applied it enables the prosthetist to mount models on the occluding frame so that their alveolar planes bear the same relation to the hinges that the natural borders do to the condyles. Third, the registration of the condyle paths insures correct adjustment of the slots on the occluding frame, and thereby renders possible, to a fairly accurate degree, the reproduction of lateral and protrusive anatomical movements.

I wish the gentlemen who discussed the paper were still present. I should like to tell them of the results we have secured from following the methods outlined. In the first place, little or no correction of occlusion is necessary, even in the lateral movements of the jaw, when the dentures are introduced into the mouth. Should such correction be necessary it is easily accomplished by placing a little carbon paper between the occlusal surfaces of the two dentures; then instruct the patient to protrude the jaw laterally in partial occlusion, and bring the teeth back to full occlusion. This marks the prominent or isolated points of contact, and these can be quickly reduced by grinding until proper contact of the several teeth involved is secured.

The next and most important result, to the patient at least, is that the first, as well as subsequent, masticatory efforts are usually successful, beefsteak frequently being easily reduced on first trial. I have in mind two cases where the patients were able to bite off cigars without displacing the dentures immediately after their first introduction.

Many patients say they can masticate with dentures so constructed as well as with their natural teeth. Such results have made us enthusiastic in regard to the methods presented this evening.

Dr. Cigrand says the occluding frame is like the pantograph; in other words, it bears a similar relation to the prosthetic field that the pantograph does to the artistic field. It may be so, but the pantograph in the hands of a man who knows how to use it will produce better results than is seen in the work of many so-called artists.

The occluding frame renders the work of arranging the teeth comparatively simple, and any minor deficiencies can be readily corrected by regrinding in conjunction with carbon paper.

I want to show you the first anatomical frame that was patented. This frame was patented on the 28th of August, 1840, by Dr. T. Evans, of Philadelphia, and antedates the Bonwill invention by eighteen years. Notice, here is a slot which enables the lower portion of the frame to work sideways, and it is claimed in the letters of patent that it would imitate the movements of the lower jaw. To my mind, that was evidently the origin of the idea of anatomical occlusion, although this cannot be positively stated as a fact. No one knows how or where the idea started. The system is the composite result of many minds and of efforts extending over a period of sixty-seven years. It has been only in the last few months that we have been able to accomplish what we are now able to do.

The subject of grinding the teeth anatomically is one that cannot be covered in a paper of reasonable length, and I could not include it in the essay tonight. It should occupy a prominent place in its presentation before the Society. There is enough of it to take up our whole time for one evening. I do not mean to infer that there should be wholesale grinding, as Bonwill recommended. We need to grind teeth only slightly if we select teeth of proper form. I do not believe in too broad surfaces, but by leaving slight grooves on the occlusal surfaces the effective force of the teeth in triturating the food is much greater than if they are ground absolutely flat, as in the Bonwill system.

Before I conclude, I wish to pay a tribute to Dr. Bonwill. I have not said anything about him in the paper. I would like to write an historical account of this matter some time, and in it Dr. Bonwill's name should be given first place. As stated by Dr. Cigrand, his efforts were not kindly received for many years. Journals refused to publish his articles. He invented a frame in 1858, but it was not until some time in 1881 or 1882 that he was able to get his articles printed. These appeared in *Richardson's Mechanical Dentistry* for the first time. All of the dental journals, I understand, refused his articles. Finally, he presented the subject to the American Dental Association, but there it was not well received. Bonwill died a disappoined man, because he had seen enough of the system to understand its importance. He realized also that the time was not ripe for the result of his labors, since the profession would not receive it. The dental profession never gave him a vote of thanks for his efforts. It never did, nor can it now, pay the debt of gratitude that it owes him. It, however, can erect a monument to his memory by utilizing his efforts, and in this way benefit humanity, which will in the end prove a more lasting tribute to him than a marble column or a granite shaft.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held October 22, 1907, with the president, Dr. George W. Cook, in the chair.

Dr. C. E. Meerhoff read a paper entitled "Oral Prophylaxis."

DISCUSSION.

Dr. C. N. Johnson:

It gives me great pleasure to welcome Dr. Meerhoff to our Society, and I think we owe him an expression of appreciation both individually and collectively for this splendid paper.

The subject of oral prophylaxis is one that is much before the profession at this time. A week ago we had a very able paper on this subject before the Chicago-Odontographic Society, and the one we have heard tonight is right in line with the advancement of the profession. It seems to me the profession generally is not living up to the highest possibilities in the care of the surrounding tissues of the teeth, and maintaining those tissues in a condition of health. Someone asked me a few months ago if I spent all of my time filling teeth, and I was obliged to answer that I spent most of my time in getting teeth in a condition to be filled, in trying to keep the mouth healthy; that I spent more time in the removal of deposits and in keeping teeth clean for my patients and directing them how they should keep them clean, than I did in any other operative procedure.

I said at the meeting of the Chicago-Odontographic Society that it was my observation, more particularly in recent years, that the injudicious use of the tooth brush in the hands of patients was doing an injury that we as a profession ought to try to check. I do not believe I brought out the point at that time as fully and forcibly as I should have done, that the injury wrought by the brush was on account of the injudicious use of it rather than the legitimate use of it. But I find many patients who are literally forcing the gum away from the necks of the teeth beyond the enamel line, exposing the cementum and cutting grooves in the cementum with the tooth brush. It is the tooth brush that does it, because we can trace almost invariably the habit of using the brush by the condition that is observed in the mouth. I have found in very many cases the gums forced away from the labial surfaces of the left upper cuspid and lateral incisor, and sometimes buccally to the left upper bicuspid, beyond the normal gum line, when that line was normal in other places in the mouth.

In instructing patients in regard to the use of the tooth brush and making them live up to the highest possibilities of prophylaxis, we should be careful to direct them as to the proper method of using the brush. It is unnecessary to state what that method is here. But there are many people who do not seem to be intelligent enough to use the tooth-brush effectively. I have patients who come to me with their teeth covered with soft deposits that can be brushed off with a bristle brush, and with the statement that they have brushed their teeth regularly and thoroughly. Some of these patients are amenable to proper instruction; but I have some patients whom I simply cannot teach. I know they try to be conscientious, but they have not the mechanical ability to properly brush the teeth. These are the discouraging cases.

I want to commend this paper. I am glad that this subject is being agitated in Chicago, and I hope the profession will awaken to the necessity of giving more attention to the hygienic cleanliness of the teeth, not only on the part of the patients, but in removing deposits that the patients themselves never can remove.

It seems to be a practice with many members of the profession to take a brush and remove the stains exposed to view, probably removing salivary calculus, but never going down under the gums and searching for serumal calculus, which is more injurious to the tissues, and it is a rare exception that the average dentist will clean a set of teeth properly. It is a long, tedious operation, and I think the reason why many do not do it is because a sufficient charge has not been made in the past for the time expended in doing that work.

I had a patient tell me not long ago that she understood the regular charge for cleaning a set of teeth was a dollar. I replied, "You never got it done in this office for that." But that is the impression which prevails with many people. Some patients also think they ought to have their teeth cleaned for nothing if the dentist has other work to do for them besides that. The profession is largely to blame in this matter. I would rather insert a filling for nothing for a patient who is financially embarrassed than to expend the energy I necessarily would in trying to clean a set of teeth properly and put the patient's mouth in a hygienic condition. If prophylaxis does nothing else than to develop a just appreciation on the part of the patient and on the part of the operator, for the time used in this kind of work, it will have done a deal of good.

DR. C. S. CASE:

This is a very important subject, and I have been very much pleased with the paper. I have been surprised for a long time that one particular feature in regard to prophylaxis has not been spoken of as much as it ought to have been, namely, the uncleanly and dangerous conditions of the teeth and pericemental membrane that arise from the correction of irregularities of the teeth. In these days, when so many dentists are correcting irregularities with very little regard to those principles which have been so ably brought out in the paper, it is surprising that dentists do not protest against the uncleanly conditions which they observe. Let us take the use of wire ligatures around teeth that are unbanded to force them out or into alignment, with the tendency of these wires to pass toward the gingival margins and press upon the pericemental membrane, as they often will, I have been surprised that dentists have not raised a protest against that sort of practice and the results that would arise probably from conditions of that kind continuing for months. I have seen some of these cases that were simply terrible, and it would seem to me that it was decidedly under the head of malpractice in dentistry. It has been my effort in the construction of regulating appliances, wherever force was applied to a tooth, to make the band as carefully as I would a crown, and to not extend it beneath the margin of the gum any more than I could possibly help, being careful to have the surfaces finished at that point and free from cement, etc. Yet with all my efforts, as Dr. Johnson has remarked, there are cases where it is impossible to influence the patients to take care of their teeth. Every one of my patients is supplied with a little bulb syringe and directed how to wash off and around the appliances and to keep the teeth perfectly clean. In those cases where the teeth are not taken care of, and the gums become tumefied and swollen, I take off the entire regulating apparatus from the mouth and clean the teeth myself, and send the patients away for weeks. I have done this recently in the case of a son of a prominent physician. I told his father that I had to take the appliance off and let him go for a month without it until the gums became healthy again. What I would like to impress upon you and upon the dental profession in general is to raise a protest against the improper regulation of teeth and the appliances that are used with so little care.

Dr. L. L. Davis:

There is no doubt that we have reached a stage in the dental profession when this subject calls for our very best efforts. I have already heard it expressed in better language than I can frame it just my idea in regard to this matter. The gentleman who has already spoken has observed what I have seen, namely, cases where it seems the average dentist does not understand what the cleaning of teeth means. I am not an extremist to the extent that the essayist seems to have carried on this work, or, at least, he quotes the authority of Dr. Smith. I am afraid that if the gentlemen keep up that kind of extreme work of pushing orange-wood sticks down under the gum, and polishing off the roots, they will have very few teeth left after a while. They will injure the gums and wear off the pericemental membrane, and if they do that once a month they are likely to have a condition spoken of by one of the speakers at the recent meeting of the Chicago-Odontographic Society, when he said that he had treated teeth so long that he could not save them; they fell out finally. And that is what will happen if the extremists of this treatment carry on their work to the extent referred to by the essayist. However, it is absolutely necessary that we do something, even though we talk about extreme measures, to bring about among the dental profession a recognition of the necessity for this work. It certainly is necessary. Whenever I have a new patient under my care who comes from the average dentist, I sometimes find that the patient has been in the habit of having the teeth cleaned twice a year. The deposits on those teeth could not have accumulated in ten years, judging from the condition of the teeth, showing how little attention is paid to this kind of work.

One particular point the essayist brought out has been called to my mind very forcibly lately, and that is the forcing of food between the gums and the roots of teeth from ill-fitting dentures. Here is a subject that demands a good deal of attention and all dentists, if they would only care for conditions that occur like that, would do more to save the few remaining teeth than in filling them or doing anything else.

DR. E. J. PERRY:

I have been delighted with the business-like way in which Dr. Meerhoff has presented this subject. There is one aspect of this question that appeals to me very strongly, and that is this: That the menial work of cleaning teeth has been dignified by the name of oral prophylaxis. When I was a student, thirty-nine years ago, my preceptor asked me to clean a set of teeth, and this was a menial, dirty job. He said to me, however, that I should not consider it menial; that it was a duty that should be performed. This was the only expression that I heard in the early years of my professional life in the way of a protest against the menial feature of cleaning teeth. For many years I practiced in the country, and it was not the custom to charge much for cleaning the teeth, and if a patient had thirty-five or forty dollars' worth of dental work done, he expected his teeth to be cleaned without any extra charge, and I believe that is the principle reason why this important part of our work has been neglected. Dr. Johnson struck the keynote when he said that this work had not been dignified by a proper fee. I believe that is true, and that, as a rule, we are too lazy to clean the teeth properly. It is hard work to clean a set of teeth. I believe it takes more skill and ingenuity to clean a set of teeth properly than to make a crown or put in a filling. I have made the statement repeatedly that the man does not live who can take off the serumal tartar from the roots of some teeth entirely. It cannot be done. I have taken such teeth, put them in a vice, and could scarcely get the deposit off with chisels. I remember on one occasion talking with Dr. J. D. Patterson on this subject, and I believe Dr. Johnson was present. We were talking about pyorrhea alveolaris, and I made the remark that I did not see how it was possible for any living mortal to completely remove the serumal calculus from the roots of some teeth, away down under the second and third molars on the distal side of the root between the teeth. Such teeth would hardly bear the necessary pressure to remove such tartar unless they were pulled out. Dr. Patterson calmly said that he could do it. I told him I did not think it could be done, and requested him to send me his photograph.

The agitation of this question of oral prophylaxis has done me more good as a practitioner than any one thing that has come up in years. I have interested myself in the subject, and am gradually preparing and equipping myself to do the work, and am working myself up into a frame of mind where I can get paid for it, when the menial part of the work will disappear. I am getting so that I feel I am doing a dignified and useful thing in cleaning teeth. I do not think the value of this operation of cleaning teeth, when it is properly done, can be overestimated. It is of great benefit to the patient.

Of course, Dr. Smith may go to the extreme in doing this work; and there may be something in what Dr. Davis has said, that if we keep cleaning the teeth long enough, we may wear them out; but personally I do not think there is much danger of getting and keeping teeth too clean. The dentist should instruct his patients how to clean the teeth, and what kind of tooth brushes to use for his purpose. Oral prophylaxis should be an important part of our business from now on. I do not think, however, that I can get my patients to come back every month to have their teeth cleaned. I have cleaned the teeth of several patients recently very thoroughly, and have already observed the beneficial results from it.

Dr. J. G. Reid:

This is not the first time I have heard a paper on oral prophylaxis. I have heard many papers in the city of Chicago by dentists on the care of the teeth and of keeping the mouth in a hygienic condition. This is not a new subject, but it is a new name. I have been interested in it ever since I engaged in the practice of dentistry, because I had it preached into me on various occasions. The care of the mouth and keeping it in a hygienic condition are important parts of the practice of dentistry. I am glad to see that the profession is awakening to the importance and need of work in this direction. It would please me very much, and most of you, I think, if some method could be devised whereby this practice could be made easier, more comfortable to the operator, and especially comfortable to the patient who is to be operated on. Those who have carried on a system of practice in this direction have found that the results are better by doing it more frequently than it has been done heretofore, and naturally we have got to educate our patients as to the necessity of having this work done. This can be accomplished gradually; it cannot be done in a day, a year, or in two years, but that it can be done there is no question. This work of cleaning teeth has been neglected in the past, largely because dentists have not taken any interest in it. This lack of interest is due largely to the fact that they have not been properly remunerated for the work. I am sure many of us can recall hearing patients say that they have had their teeth cleaned for twenty-five cents, fifty cents, and a dollar. One patient informed me of having had the teeth cleaned for twenty-five cents. I asked the patient how many teeth the dentist cleaned, and she replied, "Well, he cleaned my front teeth." I said to her, "You got a quarter's worth, to say the least." It requires skill to do this work. We do not get as much pay for it as we should, considering the time we put in to do the work thoroughly. All of us do charity work who have the interests of our patient at heart.

In regard to the use of the tooth brush, Dr. Johnson said that the gums oftentimes recede from over-brushing. I have observed that condition a few times, but I do not think the tooth brush can be held accountable for it at all times, and the reason that I mention this is because I have seen some of my patients use the tooth brush at different times. There was every evidence that they had used the tooth brush in cleaning their teeth, and that some attention was paid to the cleansing of the teeth and in caring for the mouth. One of these patients brushed his teeth in my office, so that I could see how he did it, and after seeing him brush his teeth I am satisfied that the condition of the gums was not due to the brushing of the teeth. No movement that patient made would lead me to believe that the condition of the gums arose from brushing the teeth. If you will take pains to watch your patients clean their teeth, you will find out how you may be deceived in believing that this erosion or recession of the gums is brought about by the careless and undue brushing of the teeth.

Dr. W. V. B. Ames:

I think a great deal of credit is due to Dr. Meerhoff and others who have done so much recently to lend dignity to what was previously considered something rather beneath the ability and attention of the man who calls himself an operator.

I want to devote a few words to the practical side of this question. It strikes me that something better or more appropriate ought to be devised for the purpose of polishing the surfaces of teeth beneath the gum margins than the orange-wood points. I cannot see, from the specimens that have been passed around, how it is possible to so adapt an orange-wood point to insert it properly beneath the gum margin as far as you find need of inserting it for polishing purposes without doing injury to the soft tissues contiguous to the surface operated on. So I want to ask Dr. Meerhoff to tell us whether any other material has been used to advantage, or whether some other material may not be used, such as, for instance, points of bone or points of aluminum. A point of bone would be more delicate and would have the rigidity, and charge itself with the pumice, and certainly a point of aluminum might be used to work on surfaces well beneath the gingival margins.

The late Dr. Call showed us years ago how he could charge an aluminum disk or aluminum cup with abrasive material and trim the tooth down as effectually as he could cut it with a carborundum stone or disk. It seems to me that something more delicate and more effectual could be used, which would properly charge itself or become charged with the abrasive material.

I was especially impressed with what Dr. Meerhoff said about the use of bicarbonate of soda in particular conditions, and I was impressed by his suggestion of the use of this as a hot solution. If any of you have not been impressed with the efficacy of bicarbonate of soda in the mouth as a means of loosening up mucoid deposits about the teeth, I wish that some day, when you want to freshen up your mouths, and you have not convenient a tooth brush, you would make it a habit of carrying with you in your pocket some tablets of bicarbonate of soda. Dissolve one in the mouth, and let the tongue distribute it by a sort of massage, applying the cleaning process by means of the tongue to the surfaces, and you will be surprised to find how clean and pleasant your mouth will feel after a certain amount of neglect, when on a fishing trip, for instance.

Dr. Truman W. Brophy:

In discussing a paper like this, we ought to take in as broad a field as possible, because a paper of this character should be made just as useful as it is possible to make it. It would be an excellent plan for our profession to do all that it can to bring about a better understanding of this subject among the people. We all know that since the advent of bacteriology and the study of pathogenic microorganisms, the medical profession throughout the world has been devoting more attention to the subject of oral prophylaxis, and I am one of those who believe that the reason why the field for the dentist has been so broad and the demand for his services so great is because science through the medium of the medical profession has taught the importance of oral prophylaxis. I do not believe it would be possible for our society to do a better work than to issue within as short a period of time as possible a monograph on this subject. The Odontological Society of Chicago made its reputation by issuing a little pamphlet on the treatment of pulpless teeth many years ago, and the time is now at hand when another monograph, most elaborately prepared, covering the whole field, should be issued. It would take the society a long time to prepare such a monograph which would be broad in every aspect, and this should be distributed broadcast, not only to the members of the dental, but to the members of the medical, profession, and in doing that we would impart to the people a knowledge of this important subject.

I wish to congratulate the essayist on devising and bringing to our notice so many forms of instruments for the purpose. Each and every one will naturally appeal to a man of practical knowledge of the subject, and each one presents a little different form from the other.

Dr. J. H. Woolley:

I was very glad to hear Dr. Meerhoff's paper. It is true, and it is a pity that it is true, that all these subjects come like waves. We have had a wave of porcelain fillings; we have had a wave of inlays, and now we have a commencing wave of oral prophylaxis. It is a pity that these waves strike us and pass on. I wish that our ideas of greater growth in this direction might continue. I sincerely hope that Dr. Meerhoff will keep on agitating this subject, and give us some ideas as to how to remove serumal calculus which sometimes cannot be cut off with a chisel.

Dr. Elliott R. Carpenter:

The subject of oral prophylaxis, as presented by the essayist, has opened up a very broad field for future consideration. In the first place, prophylaxis reminds me, in a measure, of a good housekeeper. The sanitary conditions depend, first, upon the courtyard. Keep that courtyard free from mud and you will attract very little of the deleterious elements into the house. Keep the mouth persistently clean—prophylactically clean, if you will—and you will ultimately free that mouth of viscid saliva.

Considerable has been said with reference to the education of our patients on oral prophylaxis. Their education on this subject is absolutely necessary; but there is something far more serious and necessary than the education of our patients, and that is the education of ourselves as dentists. You may say what you will as to your skill and your nimbleness of fingers in removing calculus, but you do not know what the removal of serumal calculus is until you get the instrumentation which has been brought about only by modern prophylaxis, for which we can thank Dr. D. D. Smith, of Philadelphia, and incidentally Dr. Meerhoff for presenting the subject here. I was brought up along these lines by preceptors and by a parent who were noted as being skilled with their fingers, who were noted as cleaners of teeth, who used the scaler and polished the teeth, with orange-wood sticks, as far back as I can remember, and I have never seen work by any of my confreres, nor have I ever accomplished work myself, that would in any way compare to the work that is now possible with the new oral prophylactic instruments. So we have, first, ourselves to educate, and then educate our patients as to the importance and seriousness of real prophylaxis, and in educating our patients we have got to consider the almighty dollar. Patients must be taught the importance of this service of cleaning the teeth properly, and they should be given to understand that you will charge them by the hour for so doing, and until we do this, they will not fully appreciate the work.

As to the use of bicarbonate of soda, as prescribed by the essayist, I wish to extend my gratitude to him for that suggestion some seven or eight months ago. I have found tissue which it was impossible to touch with a scaler without giving the patient the most excruciating pain, and I have found that same tissue, after six or seven nights of applying the bicarbonate of soda loose around the necks of the teeth, could be touched with absolute impunity, with the scaler.

The improper brushing of teeth has been commented on. We have not educated our patients in regard to the proper brushing of teeth as we should have done, because we have considered it such a simple matter. Patients should be instructed to avoid improper brushing. This may not be apropos, but I am going to suggest it: Instruct your patient to use only the rotatory motion. A patient may say, "Can I not brush my teeth this way (illustrating cross wise)"? Not once, but up and down always, and insist on it. Incidentally, advise them that if they injure the gums to open the jaws a little and keep brushing in a rotatory way until they can close them and brush.

As to the matter of injuring the gum tissue by the persistent use of pumice and orange-wood sticks, there is a possibility that this occurs in rare cases. Gum tissue, as I understand it, is a fibrous tissue, and with proper massage it is stimulated to healthy action. If you push a stick constantly down against the gum, at intervals of one or two months, keeping the surfaces of the teeth polished, the gum tissue, I believe, will grow hard and firm and you will not be enabled to go down as far rootwise with the stick at subsequent treatments, and with a humane consideration of the operation in hand, I do not believe you will do very much harm.

I think it is time that the profession is outgrowing the term cleaning teeth. It is not a dignified expression. It does not convey to the patient the importance of an operation, and yet we know it is a very important operation, that requires skill, and the term should be changed to prophylaxis.

Dr. George W. Cook:

I have given a great deal of thought to this subject, especially certain phases of it, and I have been extremely interested in it from the standpoint of not only the essayist, but from the standpoint of scientific observation of the conditions following. I have in one instance prepared a mouth under what would be considered a hygienic condition, and have done exactly the same operation in another mouth, with different results. I am looking for pointers in this matter as well as anyone else.

It is important that we should adopt some other name than that which has been stated here, the mere fact of cleaning teeth.

As Dr. Carpenter has just said, it does not convey a correct idea to patients, it means to them nothing when you speak of cleaning their teeth. It is equivalent to shining shoes or doing something of that kind. It is important to get away from that. Prophylaxis is not the best word we can use. Prophylaxis is the specific treatment of a particular condition to avoid disease. We may say, that this prophylactic treatment is a protection against caries of the teeth and a preventive of pyorrhea alveolaris, but it is not in both instances always, because while you may treat these patients and relieve them for the time being, you have not established prophylaxis at all. You are treating a condition that you will have to treat next week again or next month. If we could find some term that would convey a better idea of what we do in the treatment of these cases, it would be very desirable. Of course, we have applied the term oral hygiene in the majority of these cases of cleaning the teeth. We do not object to the term, I take it, of either cleaning the teeth or oral hygiene. If we were to assume that all of these pathological conditions of the gum tissue and of the teeth, such as caries, came from our mode of living, which is doubtless largely true, then we would be able to establish a more efficient, a more effective course of treatment to prevent these diseases.

This mucous membrane is a peculiar structure. Every cell that is on the surface of the mucous membrane is capable of living and reproducing itself alone, provided its environments are favorable, so that we have to deal with the condition of preserving that mucous membrane while we are introducing prophylaxis. I was astounded the other night to hear a man of considerable reputation say that the mucous membrane was very dirty. Now, according to my knowledge, there is no tissue in the body that is so self-cleansing as the mucous membrane of the mouth. There is no tissue that is more capable of taking away and carrying off foreign substances than the mucous membrane of the mouth, and its whole biologic principle is to build on one thing, and that is protection, and when we introduce any means of interfering with the physiology of that structure, we lessen its resistance, and eventually the thing we have attempted to prevent may arise, because we have introduced mechanically something that has prevented the physiology of this mucous membrane from being carried on in its normal way. It is not such a hard matter to remove these so-called mucoid substances, if that was all there was to be removed. But there are certain inorganic salts that play an important part in the physical properties of that mucoid substance.

The subject is a large one. In a recent issue of *The Dental Cosmos* there appears a paper by me in which I detailed a series of experiments in the mouths of dogs with reference to the action of various agents in the mouth on the mucous membrane by rubbing and by massaging and by the use of mouth washes, and, by the way, one of the best points in Dr. Meerhoff's paper is that portion of it in which he decries the use of certain mouth washes. There is not any use for a mouth wash ordinarily. One peculiar thing was noticed in connection with my experiments. I don't know whether the dog is more predisposed to the action of these mouth washes than man or not; but I noticed this, that in the course of six or eight months the mouth washes would destroy the dog's mucous membrane, that is, its physiological function. Many mouth washes are put up with a sort of metal in them. One learned therapeutist has introduced a number of methods for making mouth washes that are absolutely opposed to any scientific reason for their existence, that is, of putting bicarbonate of soda in a zinc chloride solution. If a man knew anything about chemistry at all, he would know they were absolutely inert, and that he would cause a precipitation of the zinc chloride with his bicarbonate of soda, and he would, of course, filter it out. If you filter the zinc chloride out, what is the use of putting it in there?

This discussion and similar ones will eventually bring good to us all; but it will not do it soon. We are naturally in the incubative stage of the science of prophylaxis. We cannot assume the dignity, at the present time at least, of saying that we are prophylactic at all. As the essayist has said, this prophylactic treatment is empirical; but some of the best things we have came through empiricism, so that, I presume, the best thing for us to do is to take up oral prophylaxis and practice it.

I could take issue very strongly with the whole subject from a purely scientific standpoint, had I the inclination to do so. I don't want to do it. Oral prophylaxis is a good thing. On a purely scientific basis, all we need to do is to wash our mouths twice ar three times a day with probably bicarbonate of soda, but water really would be just as good in the majority of cases. I am interested in this subject from the standpoint of what effect friction would have on tooth substance from the use of the tooth brush. The work of the late Dr. Miller on the use of the tooth brush and tooth powders is illustrated most forcibly, in that he has pointed out that the tooth-brush and tooth powder will destroy tooth substance. But that is not the most important part of it. We can fill the holes up, but it is the fact that we are going to create a condition around teeth in which the gum tissue will never return to its normal condition, for the reason that it loses its deposit.

One point Dr. Case made is interesting to me, and that is the application of metals to gum tissue. It is a surprising fact that we can tie a piece of wire where it does not touch the gum tissue at all apparently, and yet the tissue will degenerate around the tooth on which there is wire. Many of you have put nicely-fitting bands around teeth without the bands impinging on any of the gum tissues or membrane, and yet I have seen within eighteen months in such cases the gum tissue receding beyond the margin or edge of the band. I presume many of you have seen the same thing. There must be some sort of metallic action on the tissue to produce this effect.

Dr. Reid:

How do you account for it when it extends far under the gum, and the gums are healthy all the time?

Dr. Cook:

I cannot account for it. Sometimes people have ingrowing toenails and they don't know it for a long time. It is a matter of adjustment to the physiology of the tissue to that particular foreign substance.

Dr. Reid:

You would call it an idiosyncrasy, then?

Dr. Cook:

Yes, you may call it an idiosyncrasy. That is a big word.

The essayist has brought before us some very important points regarding oral prophylaxis. But we must interpret the conditions from our own standpoint. We become enthusiastic about these things, and we see one or two good results that are obtained by following a certain course of treatment, but we do not observe the bad ones. It reminds me very much of what the late Dr. Fenger said once in regard to operations for appendicitis. Dr. Fenger reported fourteen cases of appendicitis that he had operated on, and twelve of them died. Someone told him that it would ruin his business, and that physicians would not send him any more cases of appendicitis to be operated on, and he replied that he did not care very much as he had derived a lot of benefit from those that died. Unquestionably, we can greatly benefit our patients by oral prophylaxis, but we will have failures. We do not always succeed with any one thing. When a man says he can cure all of his patients, you had better look out for him, because he is liable to kill you any minute. (Laughter.) I am enthusiastic about this work, and I wish to thank the essayist for bringing this subject before us.

Dr. Meerhoff (closing the discussion):

I wish I had the power of speech to tell you everything I feel. I cannot do it, and I will not make any attempt to do so. There is one argument you could use in speaking of this subject with your patients, and that is you can easily convince them that you are doing what they cannot do for themselves, and that in this way your treatment is an adjunct to what they should do.

In orthodontic work, I really believe that orthodontists should send their patients back to their own dentists to have their mouths properly treated unless the orthodontists undertake to do it themselves. The mouths of these patients should be properly cared for from time to time, according to the discretion of the orthodontist, so that they may have the necessary care. Dr. Case has told us that occasionally he removed appliances from the mouths of patients in order to give the mouths a thorough overhauling. That is a good plan, but I believe some day we will see the mouths of these patients taken care of systematically in the way I have described. One of the most stubborn cases of pyorrhea alveolaris I have ever handled in my life was one that had been treated for irregularity of the teeth by means of ligatures, and I think I can truthfully say that case is practically cured. I don't believe I am able to say that I cured her in the sense that most men are willing to say it. I know the tissue is all sound, and the discharge from the pockets is disappearing.

Dr. Case spoke of a boy with a tumefied condition of the gum. While I cannot go into the subject as deeply and scientifically as Dr. Case would do, still I am satisfied that by systematically caring for the teeth, removing the deposits on them, eventually they will become firm and solid. It is obvious, however, that when a case has reached such a point that the conditions are practically normal, there is very little more shrinkage which can be caused by the use of the orange-wood stick. Before that time the excessive gum tissue is of no avail anyway. There is an excessive amount of tissue there which one cannot get in a normal condition, but which will have to be absorbed or taken away in some manner, and if it is removed by instrumentation, it can only go so far. You must remember we are dealing with the condition that is present, and it should be our endeavor to get it back to its best condition. That is what we are striving for. While I have seen only a few cases, I really believe that there is quite an extensive absorption in many instances. Unfortunately, we find tissue absorbed from between the anterior teeth very perceptibly at times. I do not know how to obviate this.

I had a case the other day which I mentioned to Dr. Cook. She was a young lady who had returned to the city after a few weeks' absence, with the tissues between the lateral incisor and cuspid as livid and injected as a piece of liver. Dr. Cook suggested that I saturate the projection of tissue with nitrate of silver, and then neutralize it with potassium iodide. This I did, and after seeing the patient twenty-four hours later I was surprised to see the result that had taken place. I do not believe the tissue could have been brought down in any other way and gotten in as healthy a condition in so short a time.

I have often been impressed with the dilatory manner in which, generally speaking, the profession handles cases of pyorrhea. I really believe that if dentists devoted the same amount of time to this operation of oral prophylaxis, or polishing teeth, that they do to injecting the pockets and daubing iodine on the gums, the results would be much better and more satisfactory.

I think Dr. Cook is waiting for a chance to show us that this continual grinding of teeth proves to be a damage. By a system of reasoning, figuring that one will devote say about a minute to a tooth monthly, which he can do by polishing, it would take five years to consume an hour in polishing a given tooth. Pumice stone has been used on teeth for that length of time and very little difference has been seen in the surface of the teeth.

As to the point raised by Dr. Ames in regard to the use of aluminum or some other means of carrying pumice, it is a very pertinent one. I have had it in mind more or less for some time, and the only thing I have done, beyond the use of the orange-wood stick, has been the use, when reaching beyond the gum or into the pockets, of my more or less fine and smooth files. I have brought a set of these along to show you. I have a number of sets, so that when they get dull I can use them for polishing up on the roots. I use them as burnishers. I would not do it where the patient suffers a great deal of pain. To overcome the pain, after working in a given space I pack the tissue area of three teeth, say, with bicarbonate of soda powder, and leave that area for a few moments, working somewhere else in the meantime. In a few minutes I go back to that spot and can do anything I please. Dr. Cook has made that plain in his articles in the current number of the *Dental Cosmos.* I have studied the condition of the mouth, looking for acids, but have been unable to find them; but in the necks of the teeth there seems to be an acid condition. Dr. Cook has shown by his researches that these mucoid deposits are of acid reaction.

I realize that this practice, generally speaking, is not as scientific as it might be, but when it comes to the destruction of diseased tissue or healthy tissue that remains, all I can say is, I could not believe such a condition could have prevailed, such as I see in the mouths of Dr. Smith's patients. There is a tightening of all tissues about the necks of the teeth. There is no room for pockets. Pockets may be there, but the tissues are all clean. Dr. Smith showed us case after case that had been under his care for four or five years, and it is the observation of those cases that has made me enthusiastic.

The good to be derived from the general practice of oral prophylaxis lies in the fact that the man who devotes more time to this work than he has in his professional life before will become a closer observer of the conditions of the mouth, and, as Dr. Cook has said, he will observe more closely what he sees; he will be willing to tell what he sees, and adhere strictly to the truth.

I wish to thank you for the privilege of appearing before you, and if the paper has seemed elementary, it is simply because I thought the practical side of it demanded it.

Dr. C. S. Case:

I wish to show the models of the successful termination of a very peculiar case in orthodontia. It is that of a young girl who came to me when she was about fifteen years of age. She belongs to one of the wealthy families of Chicago, and came to me with a character of irregularity and facial deformity that may be properly termed a short bite malocclusion of the teeth. All of the teeth were so short that when the jaws were brought together, in masticating occlusion, the lower jaw came nearly one-half inch nearer to the upper jaw than it should normally, with the production of great redundance of lip tissue with a decided pouting attitude.

NOVEMBER MEETING OF THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held November 12, 1907, with the President, Dr. George W. Cook, in the chair.

President Cook delivered his annual address.

DISCUSSION.

Dr. Elliott P. Carpenter:

The annual address of the President, Dr. Cook, is no more than we would have expected from him, and it is all that we could expect from him. It is pertinent to all of you that it is almost impossible to discuss an annual address intelligently at the first reading. It is a resumé of the year's work, with a series of pertinent suggestions for the ensuing year, the latter of which I am very pleased Dr. Cook has not forgotten, and his spur of stimuli, I hope, will redound to the future of dentistry and good work in the Society for the coming year.

Dr. E. A. Royce:

The line of work which Dr. Cook has marked out is a line in which there is an opportunity for a great deal of work, for a great deal of development for the individual, and possibly some enlightenment for the profession, and the possibility of giving the profession some benefit by the results of that work, condensed and stated dogmatically as facts. But the dental profession at large will not study or follow the suggestions outlined by the President in his address.

For instance, the work of Dr. Bonwill upon articulation is a masterpiece in itself, but how much is it appreciated? How much do those men quoted by our President in his address appreciate the real scientific elements of that very same thing? How many years was it before anybody appreciated what Dr. Bonwill was aiming at, or what he had accomplished by his work? It was after the fight for recognition that Dr. Bonwill made the remark to me, which I have quoted several times, that it was absolutely useless to explain scientifically to the dentists what he had tried to do, but, he said, you must simply say to them, "Boys, things are so and so," and give them the conclusions. That is the only way they appreciate it. We may be excusable to some extent. As a class, our views are limited. We are overworked. The details of our profession confine us to the minutiæ, and there are few of us comparatively who have sufficient stimulus, sufficient spur to lead us to get beyond the routine of practice, but I doubt if that is any more so in our profession than in some of the others. Of course, if this stimulation could reach all of the profession, it would be a great thing.

Dr. Truman W. Brophy:

As I look about me this evening, my mind runs back to the days when this Society was organized. We met at 70 Dearborn street, in the office of Dr. Harlan. There were ten of us present at that meeting. We elected Dr. George H. Cushing to be our first President. There are only two men present this evening who were at that meeting twenty-five years ago, and those two are Dr. Ames and myself. A great many changes have taken place since then; some of our members have passed over into the beyond; others have retired from the Society, and still others have left our city and consequently our Society.

This evening we have listened to the address of our President, who, as nearly as I can figure out, was born about the time that this Society was organized. (Laughter.) I am not going to predict who the President of this Society may be twenty-five years hence. But in the natural order of things, the President might be the son of the distinguished gentleman who has just delivered this address.

Referring to the work of this Society, I feel proud of the fact that I have held membership in it these twenty-five years, and have been associated with the men who have contributed so much to the literature and to the uplifting of the dental profession. The timber of which this society was made, and of which it has been composed in the last twenty-five years, has been such that almost anything within the domain of the dental profession lay within the power of this body, and as I look about and see the able and energetic younger men here and having listened to the address of this young man, who has been our President the last year, filled with enthusiasm as he is in his work, and will probably be to the end of his life, I predict for this Society even greater achievements in the future than in the past. We have here men whose minds are trained for original research work; men who are capable of solving problems that will be of inestimable value to the profession in the years to come.

I cannot very well discuss what Dr. Cook has presented more than to say that he has epitomized the work of the Society during the past year and presented to us for reflection the principal subjects that have been discussed during that period of time.

The last meeting of the Society was a most excellent one, and the subject discussed a live one. What we will do in the years to come in preparing monographs on topics that seem most desirable to think over and to discuss and to attempt to solve will be to the advantage of the dental profession everywhere. I remarked at the last meeting that this Society really made its reputation on the preparation and presentation of a monograph on "The Care of Pulpless Teeth." There are other subjects we might take up to advantage. Let us have committees appointed, and have their work presented here, which will be to the advantage of the entire profession.

Dr. J. G. Reid:

I do not know how to discuss this address. I was under the impression, however, that it was the duty of the President to epitomize the work done by the Society during the year, but he has not exactly accomplished that. I may be wrong in my interpretation of what that duty of the President is, but I understand it is his duty to sum up the work done by this body during the year with such criticisms as in his judgment may seem to be proper.

I appreciate as much as anyone the suggestions contained in the President's address, and if we were not all such busy men it might be possible that the fruition of the suggestions might be accomplished. Our daily work is a burden to us, and we do not seem to find time to delve into the mysterious. I speak for myself; I do not seem to be able to do it. There is much we would all like to know, and as we grow older we begin to see the need of knowing these things. We begin to realize that we want to know many things that we should have known when we were younger. We have to study these things out ourselves, and these scientific problems can only be accomplished by the young men who are interested in them, and the suggestion of the President in this regard is in the right direction, and it may be profitable to those who will undertake these investigations. But most of us are beyond that period.

Dr. W. V.-B. Ames:

If in the history of this society more of us had had the indomitable energy that has been displayed by our President from the time of his entry into the profession up to the present time, we would need to make fewer apologies for what the Society has accomplished, although I do not think, as societies go, we need to be ashamed of our work.

Dr. J. E. Hinkins:

I enjoyed the President's address very much. I was impressed with the tone of it, and with the enthusiasm with which he delved into the biological and physiological phenomena of the unknown mysteries, so to speak.

I also appreciated that part of the address which related to capital operations on young girls arriving at the age of puberty. We know that extensive operations, particularly in orthodontia, have been done on girls at this time, and these conditions should be considered very seriously. I am satisfied in my own mind that much harm has been done and is being done. There is also a time, say from forty to forty-five or fifty, when operations on women in the midst of the change of life should be done with the greatest judgment. Teeth should not be extracted at certain times during this period. I recall several cases in my own practice where the best results were not obtained by removing teeth at that time of life.

I heartily endorse what Dr. Cook has said with reference to the study of biological and physiological chemistry. This is an unlimited field. Its possibilities are great. There is no one field in dentistry so productive of good results for the advancement of dentistry than along the lines of biological and physiological chemistry.

Dr. C. N. Johnson:

The President, in reviewing the work that has been done by the Society during the year, forgot one paper that was read which provoked much discussion, and that was a paper by Dr. Royce. Dr. Pruyn also read a paper at Rockford, which was very suggestive, and Dr. Meerhoff presented one on "Oral Prophylaxis." These three papers might have been mentioned. However, the President's address was more in the line of suggestions rather than a review of the work we have done.

The arraignment he has made in regard to the laxity of the profession in its publications, in the written communications that are sent to us and published in our dental journals, is timely. He has told us that statements made by writers on dental subjects are slipshod, they lack definiteness, and are carelessly put together. That arraignment is correct and opportune. This is due largely to the fact that the men who write these papers, in the first place, do not think definitely and scientifically. They do not consider and digest a subject sufficiently before they place their thoughts upon paper. That is a great difficulty with most of our dental authors—lack of definiteness in the statement of facts, and that lack of definiteness of statement is generated by lack of definiteness of thought to begin with. The young men who are coming up in the profession, and who are to make the literature of the future, should have instilled into their minds on every occasion the necessity for definiteness of thought, no matter on what subject they are writing in dental science. Much of the misunderstanding on the part of scientists in our profession, who disagree with one another on certain subjects, is brought about by a lack of definiteness of statement when their articles are first published. This lack of definiteness of statement leads to endless dispute over points when the men in sentiment may not be at all apart, and that is one thought in the paper that has appealed to me more than anything else.

The suggestions made by Dr. Cook are timely. Any society, or any body of men in the profession, needs stimulation once in a while to make the members start over again and bring out the best elements that are within them.

It has been stated that dentists work very hard, which is true. But after all, it is the man who works the hardest who develops things that are of the greatest importance. It is not the man who has lots of time at his disposal who does the things that count for much. It is the busy man.

Dr. L. S. Tenney:

As I look back over the history of our profession since I first made my entry into it, seventeen years ago, I am impressed with the fact that the men who have made the greatest impression on dentistry and have contributed most to its growth and upbuilding have been those men who have been engaged in scientific work. I can look back over these seventeen years and see standing out conspicuously a few figures who have worked constantly, who have delved deeply into the scientific aspect of dentistry. I think it is also true that there are many brilliant men who would be capable of accomplishing great things were it not for the fact that they scatter their talents and, by attempting to encompass too many subjects, never succeed in making any great mark in any particular line of work. As a conspicuous example of that, we have our own President, who has devoted his entire time, since his entry into the profession of dentistry, along certain well-defined lines, with magnificent results. We all know that he has striven to advance the scientific aspect of dentistry. I feel that there is no young man with ordinary ability who would not make his mark and be of vast benefit to his profession if he would begin early in his career to devote himself strictly to some definite line of work, no matter how simple it may appear at first.

Dr. Cook (closing the discussion):

Dr. Johnson spoke of the papers that were read before this Society, but which I did not mention in my address. Unfortunately, I had difficulty in finding these papers in The Dental Review. I was conversant, however, with the subject matter of these papers sufficiently to mention them in a little appendix to the paper..

The reason I did not discuss these subjects or analyze them was this: I have had in mind the possibility of stimulating the members of this Society so that when they present papers they do so in a more concise and scientific way. This Society has produced some of the best papers and some of the best discussions that have ever been published in dental journals; but we must not forget that we have a mission to fulfill in that direction, and whatever we read and publish as a Society in a professional way, we should do it with the greatest accuracy and with the greatest precision possible, because by so doing it not only makes the individual member of the Society, but makes the Society as a whole. It makes the proceedings of the Society valuable contributions for the future of dentistry. We cannot expect that what we say or do at the present time is going to be thoroughly analyzed and thoroughly studied, individually and collectively, and adopted as a practice, or as a theory, by all the members of the Society, for the simple reason that it takes time and considerable research to analyze these subjects and to classify them properly. That is what I think we ought to do. I have thought that if we could take certain papers and discussions and give them to the profession in an epitomized form on a given subject, we would accomplish more than we would to give a line of practice which is all right in its way, but to enable the men who are to come after us to find what we had to say on this subject, and to show them that we had said something that was definite, and that we not only said something of our own which was definite, but we knew what other men had said definitely on this subject. I realize that no one dentist can work and follow up all subjects and be thoroughly familiar with them. Dr. Tenney has very beautifully expressed that when he said that if we could follow a definite line of work, we would be able to accomplish more. In this Society we have members who are especially interested in particular lines of work. If, when we present any papers on these lines, we could do so in such a way as to make them classics, the highest type of the best literature for the profession, then the Odontological Society would fulfill the mission for which it is intended. That was my object in taking up the subject as I did.

I am a poor critic of other people's work. I can criticize my own work; I can analyze it for myself, but it is a hard matter for me to analyze the work of others.

There was one point spoken of by Dr. Hinkins that has come to my mind, and he and I have talked this matter over on a previous occasion, namely, the period of adolescence. During this period I do not think it is wise to subject young people to orthodontia or regulating appliances and to long operations with rubber dam in the mouth, as it is, to my mind, almost criminal to do so. It is wrong to take a young girl who is passing through one of the most critical periods of her life and place her under a great strain, both nervous and physical, for a long period of time. We cannot tell the damage that we may possibly do to such individuals by regulating appliances and operations. I had in mind when I mentioned this subject to Dr. Hinkins a case that came under my observation a few years ago. A regulating appliance was put in a girl's mouth, and almost from the third week of its application until the present time she has spent most of her time in rest cures and in an asylum, and the physician who had charge of the case absolutely demanded the removal of this appliance because it was such a source of irritation to that girl. If the regulating appliance could have been used a year or two before, the result would have been far different, and I think as a profession in sending our cases to specialists we should observe these things. We should try to determine, before we send our cases to specialists, whether certain operations should be undertaken or regulating appliances used. Of course, the specialist, when we send a case to him, thinks that a certain thing has to be done, and naturally he begins his line of treatment. It is better, if possible, to defer operations on these cases and the use of regulating appliances until after puberty or a year or two before it.

Dr. Royce referred to the Bonwill system. All these years have passed, and yet but few men in the profession have taken that matter up to prove whether Bonwill was correct or incorrect. We find many articles on prosthesis in dental literature, and yet many of the authors of those articles do not take up the fundamental principles that underlie the subject matter to see whether the information they have gathered is correct or incorrect. I would like, if possible, to have some one of our members take up that subject. In order to do this, they need not go out and examine the jaws of a thousand people, but they should examine and measure the jaws of individuals with reference to the shrinkage of the alveolus after the extraction of teeth, and in this way determine whether or not at certain periods of life it is best to preserve the teeth a year or five years longer, if possible. Many patients consult dentists every day, and ask to have their teeth extracted, particularly certain teeth. It may be that some of them can be removed and a temporary bridge applied. The dentist should preserve, as far as possible, the alveolar process and all the masticatory apparatus of the mouth for old age.

Those are points that have impressed me as things which should be taken up by some experienced person who is capable of making clean-cut observations and accurately interpreting and analyzing them. They should be taken up in a systematic way; all the known facts that have already been published should be gathered together and presented in connection with this subject.

I can understand why my address would fall short of what the customary address is, and perhaps I have gone entirely outside of the domain of the constitution of this Society in presenting it; but, as I have previously said, I thought you could get the papers that have been presented during the year, read them, and analyze them better than I could.

There were two or three points touched on by Dr. Hinkins and Dr. Tenney which I would like to refer to briefly. One is the study of the fundamentals of our profession. We have had but very few papers on materials that are used in our work. Dr. Tenney presented to this Society one of the most scientific papers that has been published for years upon the condensation of gold, a metal we are constantly working with, but know so little of its chemical and physical properties, so that it seems almost a shame to modern dentistry that we do not have something more definite from the men who use these materials constantly and faithfully year in and year out. Somebody should take this matter up, and I tried to get Dr. Tenney to do so and extend it further, as I think the results of his work would be of untold advantage to this Society and to all practicing dentists.

Dr. Hinkins referred to the importance and usefulness of physiological chemistry. Physiological chemistry has become one of the most interesting, and yet one of the most complicated scientific subjects that have been presented to modern scientists. But it has in it the greatest possibilities for good, and if we could take up these subjects and apply them to our everyday practice, have somebody go into the details and do work such as Dr. Hinkins and Dr. Acree have done in the last few years, it would be of great advantage, not only to those engaged in such work, but to the dental profession, as a whole.

Dr. Truman W. Brophy:

I desire to call attention to a couple of skiagraphs made of a case which to me is intensely interesting. Briefly, the history of the case is this:

The young woman from whom these pictures were made was a student in the Leland Stanford, Jr., University, and about a year ago she began to suffer pain on the right side of the face. She went to San Francisco, and was under the treatment of Dr. Harry Carlton, and then others. Finally, she applied to another dentist, who decided that the cause of her trouble was a right lower third molar tooth, which was impacted in the substance of the jaw. After consultation it was decided to remove this tooth, but after they found its position was so difficult to reach, they decided to remove the second molar, which would permit the third molar to move forward and upward, and then they expected to relieve the girl of her trouble. In the attempt to remove the second molar, the mesial root of this tooth was left. Later an abscess formed in this location, which was opened without and treated in that way. Finally it healed, and suppuration seemed to abate, but did not. Pus still exuded from around the neck of the third molar tooth, the mesial surface of which was exposed to view. The tooth is covered with soft parts except a portion of the occluding surface, and a little of the mesial surface of the enamel. The pain still continues. The principal pain she complained of was in the area over the eye and through the inferior orbital branch of the fifth nerve. This patient came to Chicago and was examined by Dr. Prendergast, who sent her to his brother, a practicing dentist. He in turn sent the case to Dr. Johnson, who examined her, and then she was sent to me. When she came I said, "We must have a skiagraph to know more about the case."

I wish to point out to you this fact: First, you observe the normal condition of the second molar tooth and its roots. Behind this you see the mesial root of a tooth that was supposed to have been extracted. The distal root was removed together with the crown; the mesial root still remains. You observe a blackened condition of the skiagraph, which suggests diseased bone, this bone having been devitalized in the process of suppuration. Posterior to the third molar tooth is an area of diseased bone, or an area showing the absence of bone, or bone lost through the process of suppuration. You observe the roots of the third molar tooth have become enlarged. We have here unquestionable evidence of an excementosis of both roots of that tooth. We also see the bone intervening between the roots of the tooth has been lost. The excementosis of the roots has gone on to the degree of carrying it right down into the tract of the inferior dental canal and direct pressure is made by the newly formed tooth substance, and the force is partially exerted directly upon the nerve itself.

We have two reasons for this trouble. First, infection, suppuration and destruction of bone, and, second, the presence of excementosis which by pressure causes pain, and more than that, the tooth has grown so deep into the interior dental canal that it has exerted pressure upon the nerve itself.

I expect to operate on the patient in a few days. She will be anesthetized and an incision made so as to cut away the bone deep enough so that the enlarged roots of the tooth may be taken away. To undertake to remove that tooth in the ordinary way would mean a fracture.

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EDITORIAL.

THE CAST GOLD INLAY.

The cast gold inlay has come like a benefaction upon the profession. It has robbed dentistry of much of its dread, and at one sweep has changed drudgery into pleasure. It has relieved the tension of many of our operations one-half, and it appeals to patient and practitioner alike. More teeth will be saved than ever before, because they can be saved without so much discomfort and with so little sacrifice of time to the patient.

The work is not so wearisome to the dentist—in fact, it is most fascinating. It is cleanly, absorbing, exact, and reliable. Some of the results are almost magical, and it is an ever-increasing source of pleasure to use the method. Please remember that this is written by an enthusiastic gold foil operator, one who has for many years contended strongly for a wider use of the noble metal—the king of all filling materials. Gold foil has lost none of its virtue in his opinion, but the cast gold inlay enters the field as a great aid in successfully meeting those cases where the use of foil was burdensome. The cast inlay will act in conjunction with the foil filling but not to displace it.

And this leads to the necessity for a word of caution. The allurement of the cast method has a tendency to make extremists of men and to close their eyes to the proper indications for foil. This is often an injustice to the patient. The dentist owes it to his patient to employ that method which is the most effective in the given case, and there are very many of the cavities which come to us for filling which can be better and more advantageously preserved by foil than by any inlay. Let us therefore be honest, broadminded and discriminating and not a slave to any method.

There is glory enough for the man who introduced cast inlay work to the profession if employed under its proper indications, and he of all others would deplore its ill-advised use in cases where something else would be better. Every practitioner should have a cast inlay outfit in his office. He will have need of it daily, but—let us be sane.

ARMY DENTAL LEGISLATION.

We are pleased to note that on January 29th the Senate of the United States passed a bill for the "Reorganization of the Corps of Dental Surgeons U. S. Army" (S. 4432). This is the same measure which passed the Senate two years ago, but which came to grief in the Military Affairs Committee in the House of Representatives. The bill as it passed the Senate two years ago did not meet with the entire approval of the Committee on Army and Navy Dental Legislation of the National Dental Association, and certain changes were made in it through their influence with the Military Committee of the House of Representatives. These changes, however, did not meet with the general approval that the National Dental Association Committee hoped for, and although the measure was reported favorably to the House of Representatives and recommended for passage, it did not again see the light of day and died with the termination of the Fifty-ninth Congress.

Through the instrumentality of Senator Bulkeley, of Connecticut, the measure in the form in which it originally passed the Senate was re-introduced in the Sixtieth Congress, and successfully passed this body on the date above stated.

This measure, we are informed, is acceptable to the dental surgeons in the service and we think should be satisfactory to the profession at large. It provides for the retention of every member of the present dental corps who can pass the required physical and professional examinations, and whose efficiency reports are satisfactory to the Surgeon General. This is right and just and should meet with the unanimous support of the profession.

Any effort made to exclude from the benefits of this measure any member of the dental corps by reason of age alone should meet with courteous but determined opposition. Certain of the older members of the corps entered the service at the urgent solicitation of the profession and the request of the Surgeon General to organize the corps and examine the candidates presenting themselves for service.

These gentlemen made great financial sacrifices when they relinquished their civil practice to accept positions in the Army and they should not now, after more than seven years of service, and their work acknowledged to be most successful, be legislated out of office and others allowed to reap the reward of their unselfish, patriotic, and successful labors.

If we had the space we could give many quotations from the report of the senate committee on military affairs to show the esteem in which the army dental surgeon is held by those who are best qualified to judge of his needs and have personal knowledge of his services. With such testimony as this before the House of Representatives there should be no doubt as to the passage of the measure when it comes to a vote. But can it be brought to a vote? This is a question which must be left to the profession. If every dentist who reads this will at once write a personal letter to his congressman and request his friends and patients to do the same, urging upon their representative that he make a personal matter of this measure and request its immediate passage, the pressure would be so great that the wishes of the profession would no longer be ignored and the measure would pass. The political situation is ripe for such a movement. The iron is hot. Will not the profession mold it into shape by a few vigorous strokes?

THE EDITOR'S DESK.

THE EVILS OF QUACK MEDICAL ADVERTISEMENTS.

If all the injury done to humanity directly and indirectly by quack medical advertisements were to be answered for by the orthodox fire and brimstone, there wouldn't be fuel enough in the universe to supply the demand. More sickness has been developed by reading this trash than has ever been cured by the so-called remedies it advertises, and more money has been squandered by the people in buying the worse than useless concoctions thus exploited than would have paid the national debt many times over or built homes from one end of the land to the other for the aged and helpless. It is a positive evil which has planted its poison in the public mind for so many years and to such an extent that the wonder is that legislation has not long ago been passed to suppress it.

It is to be hoped that ultimately the committee of One Hundred on National Health in conjunction with the Public Health Defense League will be able to accomplish something in this direction. If President Roosevelt's statement is true that, "Our national health is physically our greatest national asset," then it would seem to be imperative that those entrusted with our national welfare should take cognizance of this tangible and perpetual menace to the public health.

In almost every newspaper and magazine in the land are printed advertisements the reading of which are calculated to make many well people sick. The heralding of disease before the public mind at all times in glaring headlines is not conducive to health or happiness. The adroit description of "symptoms" in many of these advertisements is not only misleading but in some instances positively diabolical, and should be rigidly suppressed.

Last summer I was riding on a railway train which was largely occupied by farmer folk and the good substantial middle class. At a station a young man boarded the car and distributed among the passengers a pamphlet describing all sorts of diseases possible—and impossible, with of course the sovereign remedy. There was not a single individual who read that pamphlet, as most of them did, who felt as well after the reading as before, and the disturbance of peace of mind and the amount of money squandered on that one train will never be known. But it is safe to say that every individual was made less happy by reading "symptoms," and that enough money was spent to pay for printing the pamphlet, for employing the young man, for keeping up an immense establishment to manufacture the "dope," and for a beautiful profit to the proprietors who run it. Men are not in the patent medicine business for their health, nor for the health of the public. They are there for the dollars they get out of it, and most of them care little more for the welfare of the public than does the hold-up man who attempts to rob the people—in another way.

It is a crying shame on our civilization that an evil of such vast proportions and so far-reaching in its effects should be allowed to menace the public health as this has done for so many years. Quackery of all kinds is bad, but the quackery which continually fosters disease without curing it is a positive crime.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

Dear Mr. Editor:

The New York Institute of Dental Technique at its January meeting listened to an able paper by George Miller MacKee, M. D., on "Indicanuria—a Consideration of Its Practical Importance to the Dentist," which was discussed by Dr. J. Bethune Stein, Dr. Morris I. Schamberg and Dr. Henry Potter.

The New York Institute of Stomatology has at last fallen into line with other dental organizations and gone to the New York Academy of Medicine, No. 17 West Forty-third street, to hold its meetings. How well this "new departure" will pan out only time can tell. The first meeting at the new place was on the evening of February 4, when Dr. William H. Potter, of Boston, presented a paper entitled "The Teeth of Public School Children: How Can They Be Improved?"

This was along the line of much of the work of our dental societies this fall and winter, and especially of the Institute of Stomatology. Those who discussed the paper were: Dr. Herbert Locke Wheeler, who is the organizer of the Dental Clinic of the Children's Aid Society; John J. Cronin, M. D., assistant chief medical inspector Department of Health, New York City (and the man probably most responsible for the present agitation anent the care of the teeth of public school children); W. H. Allen, Ph. D., secretary Bureau Municipal Research Society; William Dwight Tracy, D. D. S., chief of Clinic Dental Department, New York Throat, Nose and Lung Hospital; and Dr. Paul Gardiner White, of Boston.

Some interesting data were given by several of those who spoke. It is estimated that fully 600,000 children attend our public school; of this number Dr. Cronin said that 90 per cent needed dental services. He was sure that 75 per cent had never been in a dental office.

He asked the question: Are we beginning at the right end in our endeavor to solve this problem? He believes that the government should care for its children. Statistics show that about 30 per cent of parents are irresponsible. Speaking of the general physical condition of children he said it seems that we never can find a healthy child.

Dr. Wheeler in reciting some of the work accomplished by the clinic he is interested in said that during the past year they had examined 555 patients, had filled 284 cavities and cleaned only 24 mouths. An interesting item was the cost of maintaining such a clinic. The total was $504.30.

Dr. Thaddeus P. Hyatt, who has been doing a great deal for Brooklyn's enlightenment along these lines, believes the best way to teach the general school children and public the betterment of the teeth, is by illustrated lectures, say once a year in each school. He believes that our moral obligation is greater today than it ever was. It is up to us more as dentists than as men.

Dr. Maurice Green told of some of his experiences in Institutions. His summing up was that the solution of the problem lies in compulsory measures. He expressed the idea that a special tax should be levied by the city, say of 50 cents per year.

The essayist in closing referred to the fact that teeth will not remain in good condition, especially in children. He felt quite certain that compulsion could not enter.

Dr. Potter said that at a recent meeting of the faculty of medicine of Harvard University for the purpose of appropriating money for the establishment of a dental department, President Eliot said that he considered that the honor of the medical profession was to take care of the dental department.

Dr. Cronin's idea of good and bad teeth in making examinations of mouths is very good. He makes four divisions: (1) Those having simple erosion, (2) cavities, (3) shell, (4) absent. I think a fifth class should be recorded, viz.: perfect teeth.

Dr. John S. Marshall, U. S. A., came in too late to hear any of the paper and but little of the discussion, but the chairman called upon him for a few remarks. Speaking of the enlisted man in the army, he said he is supposed to be physically perfect, but his teeth are generally in very bad condition. The rule was that he should have two opposing molars on either side of the mouth. His food is good and wholesome but he needs good teeth. He is in the army but a few months when he develops gastritis, etc. Dr. Marshall raised the requirements so that now the rule is 4 opposing molars on either side. Of soldiers who returned from Philippines one regiment 87 per cent, another 93 per cent needed attention. He has signs up in his quarters which have helped very much: "Clean teeth do not decay."

The forty-first anniversary meeting of the New York Odontological Society was held at the Academy of Medicine on January 21.

The society had as essayist Dr. J. P. Gray, of Nashville, Tenn., who read a paper on "Arrest of development the cause of diseases of sinuses of the face and head." Dr. Gray embellished his paper with lantern slides in support of his deductions, which were not fully accorded with by those who discussed the subject.

Prof. Fanueil D. Weisse laid stress on the fact that environment modifies the face and heredity modifies the arches. Dr. Weisse went into the physiological and histological development of the embryo, illustrating on the screen. The brain and spinal cord are developed first. The development of the face is secondary to the crania. All instances of premature birth show lack of development of the face. These points stand as anatomical facts. His idea is that if children were required to chew hard food they would have better teeth and mandible.

Dr. Kemple said that he did not believe that Dr. Gray showed arrested development, and he did not like the term—rather call it poor development.

Dr. Schamberg was not inclined to pin bouquets on modern dentistry. He believes it is the cause of most all the antral diseases, brought about by faulty root treatment and went so far as to say that in his opinion much of the prevailing appendicitis might be due to infection through teeth.

Dr. Ottolengui said he was going into collateral science. The longevity of man adds much to the difficulty of studying him. Some other studies where the life span is short, gives one opportunity for arriving at conclusions through the study of numbers of generations that it is not possible for one individual to do in man's study. That is the study of moths.

He said that in his collection there were moths from almost every section from New York to California. Both ends of the chain are different when seen separately, but in advancing from one section to the other in going west there is but very slight change. Environment, he deduces, does make much toward modification.

Rhinologists say that adenoids are brought about by mouth breathing. Dentists say that mouth breathing is due to adenoids.

Dr. Vaughan brought out the fact that infants shortly after birth have had to have adenoids removed to establish proper breathing.

Dr. Ottolengui rose again to say that there is no single etiological cause for lack of development or synovitis, etc.

The First District Dental Sciety of New York at its regular meeting February 11, 1908, listened to a very valuable paper by Dr. J. W. Wassall, of Chicago, entitled "Oral Hygienics," in which he gave much good advice as the result of clinical experience in the care of the mouths, etc.

The discussion was participated in by Dr. Hutchinson, of Brooklyn, president of the Second District Dental Society, who is something of an expert himself in the treatment of diseased conditions of the mouth, and Dr. Meyer L. Rhein, of New York, who has also given much thought to those matters which have to do with the care of the mouth.

Previous to the reading of the paper Dr. F. T. Van Woert, of Brooklyn, and Dr. John H. Meyer, of New York, exhibited some specimens of their handiwork in the way of cast gold fillings. Both of these gentlemen have made an especial study of this work and are certainly experts.

It is the custom of the New Jersey State Dental Society to have what they term a "Mid-Winter Meeting" of the officers of the society, at which time plans are made and committees appointed for the coming summer. In this way six months in advance of the meeting, the machinery is set in motion. This is one of the many reasons why the annual meetings of this association at Asbury Park, N. J., are so uniformly successful.

It has been the custom for over twenty-five years for the president of the society to give a dinner on the evening of this day—which is always in January—to which dinner he invites those whom he chooses as guests outside of the officers of the society, who, by reason of their positions are entitled to be present. So it has come to pass that this dinner is quite an event and happy is he to whom the honor of an invitation is extended. Your scribe was so honored this year by the president, Dr. Walter Woolsey, of Elizabeth, N. J., and the dinner was one long to be remembered. Dr. William Wallace Walker, of New York, was the first speaker, after President Woolsey's introductory remarks. Dr. Walker was in an unusually happy vein and made a lengthy speech outlining much of what the first District Dental Society expect to accomplish in the near future and asking those present to be as helpful as possible, especially along the line of such work as the care of the teeth of the public school children.

The Rev. Dr. William Force Whitaker, of Elizabeth, N. J., followed, and his remarks made a deep impression. He sought to encourage a civic pride in each man of our profession who, having made an honorable name and position as a dentist, was exhorted to ever keep in mind his social and civic duties, and not to fail in their performance.

Dr. B. F. Luckey, of Paterson, N. J., as representing the New Jersey State Board of Examiners, was the next speaker. He gave some details of the work of the board and emphasized the fact that the board was emphatically above reproach and striving to do honest work in all directions.

The next speaker was J. P. Reilly, M. D., president of the Elizabeth School Board, who detailed some of the work that has been done, and will still be done along the lines of care of the teeth of school children. He expressed surprise at what he had learned this evening of the position the dental profession occupies in the fore front in this work.

Dr. R. Ottolengui gave a forceful presentation of the Army and Navy Dental situation asking for the recognition of Drs. Oliver and Marshall, which they so richly merit. He offered a letter to Congressman R. Wayne Parker, of New Jersey, for the endorsement of those present.

The officers and guests gladly signed it and it was forwarded to the congressman.

THE BURROUGHS.

THE DENTAL COLLEGES OF AMERICA.

Chicago College of Dental Surgery, Chicago, Ill. First Class Graduated 1884. Total Number of Graduates to January, 1908, 2,581.

College of Dentistry, University of Illinois, Chicago, Ill First Class Graduated 1899. Total Number of Graduates to January, 1908, 353.

THE DENTAL COLLEGES OF AMERICA.

Northwestern University Dental School, Chicago, Ill. First Class Graduated 1886. Total Number of Graduates to January, 1908, 2,360.

Indiana Dental College, Indianapolis, Ind. First Class Graduated 1880. Total Number of Graduates to January, 1908, 1,014.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

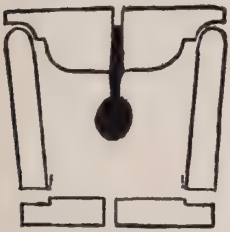
Antiseptic Spray for Teeth and Gums:—In cleaning teeth I frequently follow the stick and ribbon floss with the brush wheel used upon the coronal surfaces. After this is all done, I use an antiseptic spray under a pressure of thirty pounds, and go all over the teeth, between them, and especially under the gum margin, to thoroughly wash out any debris that may be left. The spray that I use is echefolta, 1 ounce; dioxygen, 5 ounces, and water, 4 ounces.—*J. V. Conzett, Dubuque, Iowa.*

Smoked Glasses for Cast Gold Inlay Work:—Since cast inlay work has met with the approval of the dental profession, it would be well to bear in mind that it is essential to wear dark or smoked glasses in order that the state of fusion when the gold has reached the correct temperature may positively be ascertained. It is at this point in the procedure where part of the success in this method may be attributed. This should appeal to every one who enjoys the pleasure of casting gold inlays.—*Bernard Bramm, Chicago.*

A Varnish for Impressions:—Sodium silicate and ammonium hydroxide, equal parts, forms a varnish that is indispensable for plaster molds, impressions, etc., and is inexpensive. For impressions—apply in the same manner as you would shellac. A coloring matter, as carmine, may be added so that the division line may be readily seen. Separate in the same manner as with shellac. When used on models in flask before packing the rubber the plaster readily separates from the plate after vulcanizing, leaving it clean and smooth.—*T. A. Leach, Emporia, Kansas.*

Agent for Cleaning Teeth:—It seems to me that there are several substances more soluble than is pumice that might be used with results, and as a substitute, I would suggest precipitated calcium carbonate. This substance is practically insoluble in water, but its solubility is much increased by mild alkaline solutions or carbonic acid. I would suggest, after removing the concretions from around the teeth, that we pack in the interproximal spaces and at the gingival border, a quantity of light magnesium oxide, which will form a gelatinous mass, commonly called milk of magnesia, in proportions of one of the oxide to fifteen of saliva.—*C. E. Jones, Chicago.*

To Prevent Cracking of an Investment for Casting Gold Inlays: —To prevent the cracking of an investment caused by the expansion of the steel ring and contraction of the investment, which leaves a space between the investment and the ring, have the ring tapering and allow a space at the bottom to permit the investment to settle and it will not crack from pressure used to force the gold into the mold, especially in casting on porcelain, as it is necessary to have the investment so very hot.—*Homer Almon.*



Restoration of the Voice in Prosthesis:—The lingual surfaces of the upper incisors are concave, and about half or three-fourths of an inch back is quite a prominence of the hard palate. The mucous membrane fills in back of the teeth so as to form what might be called a double curve between the points of the teeth and the center of the hard palate. The play of the tip of the tongue upon the teeth and this prominence is one of the most important movements in speech, and when we can restore this portion of the mouth to the form given by nature we will have made a long step towards the restoration of the voice to our patients.—*A. E. Royce, Chicago.*

Prophylactic Treatment of the Teeth:—I want to throw out a word of caution on the subject of prophylactic treatment of the teeth, and that relates to the danger of destroying the normal function of the so-called gingival organ. We should realize that the most important point of attachment of the peridental membrane is the exact gingival margin, the first few fibres which unite the teeth to the gum tissue. If we destroy these first fibers, we are making a place for the lodgment of mucous secretions and the beginning of pyorrhea. The more I observe these cases and study them carefully, the more cautions I am about injuring this gingival atachment of the gum to the teeth.—*Elgin MaWhinney, Chicago.*

Treatment of Acute Alveolar Abscess:—Treat the abscessed condition by whatever means you wish to employ, and having got the surrounding tissue as healthy as it is possible to get it, carefully ream out the root just up to the foramen, leaving the foramen itself the most constricted part of the canal. Measure the exact size of the foramen and plug it with a tapered lead point which should protrude through the foramen. This point can be then carefully malleted upon so as to absolutely seal the foramen. To effect this I always have on hand a number of sizes of lead wire with which I measure the opening. Having selected the wire, I taper the end and nick it all around with a knife, push it into position, twist off the stem and tap the tapered end into place and fill up with guttapercha, or insert a pin for a crown.—*E. Frank Day, London, England.*

Practitioners in Country Towns:—I say to those practicing in country towns, keep abreast with the times and do not let your brothers of the cities surpass you in any line. Do for your patrons all the different classes of work that can be done in a city. You not only raise your own standard in their opinion, but that of the profession as well. And the public, entrusting themselves to your care, have been educated in the latest and most refined methods of caring for their teeth and oral hygiene in general, I believe, as an example, orthodontia is a subject that is very much neglected by the general practitioner who is away from the reach of the specialist. We who practice in the smaller towns must perform these operations for facial deformity or let the patient go through life unhelped and thus narrow the appreciation of our professional ability in the eyes of the public.—*W. C. McWethy, Ashton, Ill.*

Treatment of Appendicular Cysts:—The only rational treatment of the paradental cyst relies upon the complete destruction of the epithelial lining membrane. The treatment of the large unilocular and multilocular cysts belongs to general surgery, but the small ones can be treated by any dental surgeon. After a complete local anesthesia the root in connection is extracted. Then with strong scissors cut to the gingivo-labial or gingivo-buccal solcum with two divergent lines without going out of the mesial and distal interalveolar septums. The bony mucous flap is then to be excised; in this way we have secured entrance to the cystic cavity, and with a spatula if it is possible the cyst is to be enucleated and if it breaks it should be curetted and afterward all the internal surface burned with the thermo-cautery. Paint the cavity with iodine and insert a rubber drainage through which antiseptic irrigations should be made daily.—*Angelo Chiavaro, Rome, Italy.*

Gold Inlays for Abutments:—Gold inlays will often be of great service as abutments for small bridges, thus saving considerable tooth structure and avoiding the unsightly appearance of gold crowns. After cementing two strong pivots into the canals, cover them with gutta-percha to allow of taking an impression in the usual way. After the tooth is built up by hard wax to its correct outlines, with perfect contact points and sharp occlusions, with a spoon excavator cut a big hole in the center of the matrix and hollow out the wax. This can be done whenever desirable in all big gold inlays, thus making hollow gold inlays. As the investment material will fill up this excavation, the result will be a perfect fitting gold crown, avoiding unnecessary cutting, preserving the bulky portion of the tooth, doing away with the free edges of a band irritating the gum, the contact points nearer perfect and a strong masticating surface that will not wear our.—*O. Solbrig, Paris, France.*

Testing Cements:—I have read with care and interest Dr. J. O. Keller's article in February REVIEW concerning cements. Of course the supreme test of value is service in the mouth. How shall dentists test cements out of living mouths? I give a test which, other things being equal, is conclusive as to strength and density.

Weigh forty grains of the cement powder. Note its weight. Mix with it phosphatic liquid to a consistency suitable for use in and about the teeth. Allow to set. Weigh pellet and note the added weight. Difference will show the weight of liquid in grains.

Make a cylinder, say ¼ inch in diameter and ¼ inch in length.

Allow to set one week. With dynamometer crush the cylinder and note crushing resistance. It should bear 500 pounds to invite further tests. The least weight of liquor and the greater crushing resistance will indicate homeomorphism. Least liquid, best cement. More powder, more body, strength and least solubility. This is only one of many tests. I will give others if desired. A. C. HEWITT.

Amalgam Inlays;—There are places in the mouth where I believe the amalgam inlay to have advantages in certain circumstances over other filling materials. Of this class is erosion of the necks of the teeth, from the second bicuspid backward. We may fill such cavities with gold, in which case the patient must suffer the inconvenience of the rubber dam, the clamp and the malleting, beside the pain if the neck of the tooth is sensitive, and of the subsequent grinding and polishing. This is obviated by all inlays but perfect gold or porcelain inlays are difficult to make for these shallow cavities. On the other hand, this is the simplest possible cavity for an amalgam inlay. The impression is made with a rod or cone of impression material a little larger than the cavity. The point only is softened and the harder part of the compound presses away the gum so that a sharp margin is obtained. Where the margins are perfectly sharp, no excavation need be made before taking the impression. Silver nitrate applied to those parts where undercuts are to be placed will make excavation less painful at the next sitting. In this way the operator can make a perfect filling with the least pain to the patient.—*H. W. C. Bodecker, Berlin, Germany.*

OBITUARY.

DR. CHARLES F. MATTESON.

DIED—In Chicago, at the home of his brother, Dr. Arthur E. Matteson, on February 2, 1908, Dr. C. F. Matteson.

He practiced dentistry in Illinois from 1869 to 1898, from 1876 to 1898 in Chicago. He was a life member of the Illinois State Dental Society, and was at one time President of the Chicago Dental Society; Past Commander of the Geo. H. Thomas Post 5, G. A. R., and a member of the Loyal Legion.

MEMORANDA.

NORTH DAKOTA DENTAL ASSOCIATION.

The North Dakota State Dental Association holds its next meeting at Devils Lake, N. D., May 12, 13 and 14, 1908. A large attendance is desired.

O. H. **Sossman**, Secretary.

NEBRASKA STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Nebraska State Dental Society will be held in Omaha May 19, 20 and 21, 1908, at the Creighton Dental College. All reputable members of the profession are cordially invited to attend.

Fraternally yours, E. H. **Bruening**, Secretary.

MEETING OF THE TEXAS STATE DENTAL ASSOCIATION.

The next annual meeting of the Texas State Dental Association will be held at Dallas June 11, 12 and 13, 1908. Visitors from other states cordially invited to attend.

J. G. **Fife**, Secretary,
Dallas, Tex.

ALUMNI ASSOCIATION OF ST. LOUIS DENTAL COLLEGE.

The Alumni Association of the St. Louis Dental College wish to announce that their annual clinic will be held at the College building (Grand and Caroline street), Tuesday and Wednesday, May 19th and 20th, 1908. A good program is being arranged and all graduates of the college are respectfully requested to be present and aid in making this meeting a success.

W. M. **Collins**, T. F. **Fleming**, Committee of Publicity.

REORGANIZATION.

A reorganization of The Ransom & Randolph Company has been effected on account of the deaths last December of the company's founders, Messrs. Ransom and Randolph, and the business turned over to a new company, which was incorporated at Columbus, February 13th, with a capital stock of $150,000.

C. S. Bigelow has been elected president, with F. G. Crandell secretary-treasurer and these two men, so long members of the old company and well known to the profession and dental trade, will be in active management.

NORTHERN OHIO DENTAL ASSOCIATION.

The fifty-first annual meeting of the Northern Ohio Dental Association will be held at Canton, Ohio, May 26, 27, 28, 1908.

The sessions will be held in the city's auditorium, one of the largest in the middle west, with headquarters at the Courtland Hotel. There are numerous other hotels in Canton, so there will be accommodations for all. Hotel rates may be had at from $1.50 to $5 per day, American plan.

Canton is essentially a dental manufacturing town, having three large and busy plants. The exhibits will be first class.

The committees are sparing no time or expense to make this an especially attractive meeting. The programme will be up to the standard of previous years. Men of international reputation have been secured to read papers and clinics.

Remember the time and place, May 26, 27, 28, 1908, Canton, Ohio. The Executive Committee, W. H. Whitslar, J. H. Wible, F. M. Casto, Chairman.

RECENT PATENTS OF INTEREST TO DENTISTS.

874,379. Dental crown driver. Clarence R. Averill, Webster, N. Y.
874,489. Dental pliers. Gilbert J. Clark, Mayville, Wis.
875,885. Barbers' chair. E. Berninghaus, Cincinnati, Ohio.
876,043. Tooth crown. T. A. Davis, Warsaw, Ill.
875,992. Dental tool. H. A. Gollobin, Newark, N. J.
876,526. Dental extractor. O. Cholinsky, Prague, Austria-Hungary.
876,842. Dental tool. L. S. Robinson, Alameda, Cal.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

THE

DENTAL REVIEW.

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ON ABNORMALLY ACID SALIVA.*

BY S. F. ACREE AND J. E. HINKINS. (1)

(Preliminary Announcement from the Chemical Laboratory of the Johns Hopkins University.)

The normal saliva is slightly alkaline. But there are many individuals who normally have acid saliva, the consistency and acidity of which vary markedly with changes in health and habits. In such individuals general erosion of the teeth is one of the distinguishing features, and the ravages of this malady may become so great that the teeth are eroded to the gum margins and only the roots are left.

A study of the source of these acids, their nature and amounts, and their reactions with other substances present, is not only very intricate, but of the greatest value. It is suspected that some of these acids are produced by changes in carbohydrates similar to the reactions involved in the pinacone-pinacolin rearrangement. Several individuals with markedly acid saliva have come under our care, and have been subjects of investigation. The present is a partial report of our studies, intended to give an outline of some work that will be forwarded in the future as our time permits.

The source of these acids in the saliva is a subject of great interest. Some authorities (2) hold that these acids are produced by bacterial agencies in the mouths of those individuals having markedly acid salivas, while others (3) claim that the acidity of the saliva is due to the secretions of the buccal or labial glands. In this latter latter case then the acids must have been produced, not by bacterial agencies, but perhaps by the action of enzymes, perhaps by abnormal reactions taking place in the glands or elsewhere. The nature of these acids is also one of doubt and dispute. One writer (4) claims that all cases of general erosion of the teeth are due to lactic acid, and that all cases of local erosion are due to the presence of calcium dihydrogen phosphate or sodium dihydrogen phosphate.

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*Read before the Chicago Odontographic Society December 17, 1907.

1. We are indebted to the Carnegie Institute of Washington for aid in this work.—S. F. Acree.
2. Miller, "Mikroöragnisem der Mundhöhle," 1892.
3. Kirk, *Dental Cosmos,* XXIX, 50, 1897.

In order to study some of these questions carefully we obtained the consent and hearty coöperation of five persons of intelligence suffering from erosion of the teeth, attended with marked acidity of the saliva. It was soon found that all of these patients kept their mouths very clean and that the saliva of each individual was acid as it entered the mouth. Accordingly, all of the patients were instructed to cleanse the mouth thoroughly with a brush and antiseptic tooth wash as many times each day as possible (five or ten times) and the saliva of each individual was then collected at frequent intervals over a period of several months. When the patient presented himself he cleansed his mouth thoroughly and then collected a volume of his saliva, the flow generally being a normal one. Sometimes the patient chewed pure rubber to cause a more rapid flow of saliva. Ten cubic centimeters of the saliva were then titrated with potassium hydroxide in the presence of phenolphthalein. It was found that only a small correction was necessary for the carbon dioxide present in the saliva. The following table gives a general summary of the conditions found by a study of these individuals over a period of approximately six months:

HISTORY OF CASES UNDER INVESTIGATION.

		C.c of N/10 KOH required to neutralize 10 c.c. of saliva.
1.	Saliva of Dr. F. (42 years), no erosion	0.34
2.	Saliva of Dr. A. (28 years), slight erosion	0.70
3.	Saliva of Mrs. H. (52 years), decided erosion for 12 years	1.32
4.	Saliva of Dr. H. (46 years), decided erosion for 2 years	1.40
5.	Saliva of Mr. G. (62 years), very decided erosion for 3 years, now extending from molar to molar	1.94

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4. Kirk, *Items of Interest*, July, 1902. On the contrary, see Hinkins, Cook and Buckley, THE DENTAL REVIEW, April and August, 1905.

The table shows that the severity of the erosion in these cases was in proportion to the acidity of the saliva.

What is the nature of the acid or acids? Are they organic or inorganic, or acid salts like sodium, dihydrogen phosphate, or a mixture of all these? Where and how is the acid formed? A consideration of the conditions makes it necessary to recognize that the acids can be produced in each of the following ways:

(I.) Acids can be generated by bacteria in the saliva after it has entered the mouth and bacteria have come into it from the mucous membrane of the mouth and from the teeth.

(II.) Bacteria, ærobic and anærobic, imbedded in the mucous membranes of the mouth and in the teeth can generate acids *in situ* from constituents of the saliva or from epithelium, which can then flow into the saliva and make it acid.

(III.) Ærobic and anærobic bacteria, inhabiting carious places in the teeth, generate acids which may exude into the saliva.

(IV.) Bacteria inhabiting the ducts leading into the mouth can generate acids from the constituents of the saliva or from the walls of the ducts and the acid is taken into the mouth in the saliva. This may take place in all or only some of the ducts.

(V.) The saliva can be secreted acid in the glands, because of a general acidosis and a tendency for all the secretions to be more or less acid. We shall investigate the relation of the acidity of the urine and stomach contents to the acidity of the saliva of our patients. The acidity may be due, perhaps, to some abnormal action of the gland or to the decomposition of some easily hydrolyzed abnormal constituent of the saliva; the saliva then enters the mouth acid. This may take place in all or only some of the glands furnishing secretions for the mouth.

Which of these five processes are chiefly concerned in the formation of the acid? In the cases which we are studying it seems that the process (I) can be of only very slight moment. In the first place, all of the quantitative data which we give below, and which others have obtained, make it very improbable that any mouth bacteria can generate acids rapidly enough to account for the acid found in the saliva. We must remember that the saliva is in the mouth only a few seconds before it is swallowed or expectorated; but the amount of acid found in the saliva in some cases is equivalent to that which it takes bacteria hours, instead of seconds, to generate in culture media resembling the saliva. It may be contended by some that this evidence is insufficient (*a*) because the artificial media are not saliva, and (*b*) because it is well known that some bacteria flourish in the mouth, and elsewhere, but can not be cultivated on artificial media. It may be contended that there might be some bacteria present in the mouth which can produce acids very rapidly in the mouth, but not readily, or not at all, under other conditions. The answers to these objections are: (*a*) No bacteria have ever been shown to produce acids so rapidly under the most favorable conditions. (*b*) If there were such bacteria in the saliva, we should be able to obtain a great increase in the acidity of the saliva by allowing the collected saliva to stand a short time at 37°, or room temperature, or by allowing the saliva to remain longer in the mouth and then collecting and titrating it. Neither of these, however, is the case. We have often let the saliva stand from one to four hours and have found the acidity to be little different from that of the freshly secreted saliva. We have often had the patient keep the saliva in the mouth for a considerable period of time before collecting it, and have then found the acidity to be the same as that of the samples collected more rapidly. Furthermore, we have often neutralized the saliva and allowed it to stand and have found the increase in acidity to be very slight in one to four hours. It seems that these experiments show that the acid is not produced to any considerable extent by bacteria in the saliva in the mouth, because these same bacteria would probably continue to produce acid in the saliva after it had left the mouth, especially in the saliva that had been neutralized and the inhibiting effect of the acids on the activity of the bacteria removed. There was no appreciable difference in the acidity of the saliva collected before cleansing the mouth and that collected afterward. Since in cleansing the mouth the bacteria are largely removed from the mouth, there would then be fewer bacteria and less chance for bacteria to get into the saliva. Therefore the saliva should be less acid when coming from the cleansed mouth than it was before. The fact that it is not is evidence against the theory (5) playing an important part in the cases under consideration.

The process (II) can be only very slightly concerned in the formation of these acids. If there were ærobic bacteria on the sur-

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5. Miller, *loc cit.*

face of the teeth and mucous membranes of the mouth, or anærobic bacteria imbedded in these, which could generate these acids rapidly we should expect to find differences in the acidity of the saliva collcted before and after thoroughly cleansing the mouth with a brush and antiseptic wash and killing or removing some of the bacteria. Such is not the case. Furthermore, saliva held in the mouth for some time is not changed in acidity, as it should be if the bacteria imbedded in the mucous membranes can generate acids rapidly from constituents of the saliva. Dr. C. A. Herter (6) informs us, furthermore, that he believes that his experiments with B. Ærogenes capsulatus proved that this anærobe cannot generate acids rapidly enough to account for the amount of acids that we find in these salivas.

The process (III) can be only very slightly concerned in this question. Some of our patients with acid saliva have no caries. It is true that Miller (2) and others have shown that acids are produced in all of these cavities, but the amount of acid is very small as we have often proven by experiment. Cavities are formed too slowly and there is too little acid in them to cause any such acidity of the saliva.

Whether the secretion entering the mouth from the various ducts (processes IV and V) is as acid as the total saliva collected can be determined by experiment. It is a very easy matter to dry the mucous membrane around the mouth of a duct and then apply litmus paper to the issuing secretion to test its acidity. The secretion from Steno's duct in some of our patients was decidedly acid to litmus, but in others only weakly acid. We can catheterize some of the ducts, collect the secretions and estimate their acidity. This has been done in certain cases and the acidity of this collected secretion corresponded to that of the total saliva. Furthermore, we have been further able to prove that process (IV) is little concerned in the cases under investigation. If the acid of the saliva were formed by bacteria inhabiting the ducts, then we should be able to find bacteria in the secretions issuing from such ducts. Professor G. W. Cook had made some special investigations along these lines and he finds that there are no bacteria present in these secretions in the cases under investigation. His work will be given below.

It is evident then that processes I, II, III, IV cannot be greatly

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6. THE DENTAL REVIEW, Vol. II, p. 1, 1906.

concerned in the formation of the acids found in the saliva of the individuals under investigation. This leads us to the conclusion that the saliva is probably secreted acid in the gland.

We have catheterized the left Steno's duct of some individuals and collected samples of the secretion. The catheter consisted of a glass tube about 6 inches long and one-fourth inch in diameter, having fused in it at one end a fine platinum tube 1 millimeter in diameter and 3 inches long. To the other end of the glass tube was attached very tightly a small rubber bulb. The catheter was sterilized and the mucous membrane around the mouth of the duct was rubbed well with sterilized gauze and washed with alcohol. The rubber bulb was compressed and the platinum tube was inserted about one-half inch into the duct. This is an easy matter with those individuals who have large Steno's ducts, but causes some pain to those having small ducts. After the duct has once been entered in this way it is far easier to catheterize it subsequently. When the pressure on the rubber bulb is released the secretion flows into the catheter. The flow can be increased by putting a lump of sugar into the mouth of the patient, or by giving the patient pilocarpin. The analyses given below were made on the normal secretions. The catheter should be moved around so that the small platinum tube will not become stopped by the mucous membrane of the duct. The experiment does not cause much inconvenience to the patient.

The following table shows the acidity of the secretions from the left Steno's duct of three patients and the acidity of the total saliva collected at about the same time. The saliva was generally diluted with two volumes of distilled water and titrated in the presence of phenolphthalein till the color was as intense as that produced by 0.02 c.c. of potassium hydroxide in the same volume of water. All these samples of saliva redden litmus instantly.

	Volume of N/10 KOH required for 10 c.c. of secretions from Steno's duct.	Volume of N/10 KOH required for 10 c.c of mixed saliva.
1. Dr. A.	0.30	0.40
2. Dr. H.	1.00	0.72
3. Dr. C.	0.90	0.96
4. Dr. H., one year earlier		1.40
5. Dr. C., one year earlier		0.00

It will be seen that in the cases of Dr. A. and Dr. C. the acidity was about the same for the secretion from the left Steno's duct and for the total saliva. But the secretion from the left Steno's duct of Dr. H. was much more acid than the mixed saliva. This makes it probable, as we should expect, that the acidity of the secretions from the sub-maxillary and other glands may differ from that of the Steno's duct. There may be abnormal conditions in one set of glands but not in another set, which conditions at another time might be reversed. The fact that Dr. H.'s saliva was more acid a year earlier, and Dr. C.'s saliva nearly neutral at the same time, shows how the acidity of the saliva may vary with health, food, and other conditions. We shall continue the researches along these lines and investigate the secretions from each of the accessible ducts.

It was stated above that Prof. G. W. Cook has investigated the question as to whether bacteria are to be found in the ducts and glandular secretions of the oral cavities of those individuals suffering from acid saliva and erosion of tooth structure. A glass tube about the size of an ordinary lead pencil was drawn out so that part formed a small capillary. A small rubber bulb used on an ordinary medicine dropper was placed over the large end of the glass tube, making this glass tube somewhat the shapes of a medicine dropper, with the exception that the capillary was much smaller and longer. The end of the capillary tube was rounded in order that it might be passed into the duct without producing any injury to the lumen of the duct. Before inserting the tube the air was forced out of the rubber bulb. Steno's duct was used, principally because of the accessibility of this particular duct. Seven different individuals were experimented on. All of the oral cavity was made as nearly sterile as it was possible to do under the circumstances. The mouth was thoroughly brushed, cleansed, and rinsed with an antiseptic solution, thoroughly removing, as far as possible, every particle of foreign substance. The mouth was then again rinsed with sterile salt water until all of the antiseptic solution was thoroughly removed. The tube and all the apparatus used in these experiments were thoroughly sterilized, and the work was done under the most antiseptic conditions possible.

Several drops of saliva were collected each time from the duct. Some of each sample was placed on microscopic slides and examined, and the rest was made into plate cultures by the ordinary methods of cultivating bacteria. The slides that were made directly from the secretions of the gland were stained by various standard methods to determine, if possible, the presence of bacteria by direct microscopic examination. In general, however, no bacteria were found. Of course, occasionally bacteria were found, but not in number or kind that differed from those that might be present from possible contamination from the oral mucous membrane. Control plates were made from the mucous membrane near the opening of the duct and from various other locations in the mouth, but the cleansing of the mouth had been done so thoroughly that the oral mucous membrane and other parts of the mouth, which bacteria might inhabit, were almost entirely free from germ life.

The cultivation method was carried on under both ærobic and anærobic conditions with practically the same results; namely, bacteria were not found present in sufficient numbers to say that, as a general proposition, the ducts or glands contain bacteria. In fact, these examinations lead us to believe that the ducts or glands of the parotid variety seldom, if ever, have bacteria as a constant inhabitant. Out of the eighty-six plate cultures that were made under strictly anaerobic conditions, four of them contained growths of bacteria; these growths were identical with those found in the cultures made from the oral cavity and grown under aerobic conditions. A large number of plate cultures were made under aerobic conditions from samples taken from the ducts and from the oral cavity. The bacteria found in this aerobic cultivation proved that there was more bacterial growth under aerobic conditions than under anaerobic conditions. Out of the sixty-eight plates made under aerobic conditions there were seven that contained growths of bacteria, and these proved to be identical with the bacteria found in the control plates made from the mucous membrane of the oral cavity. The evidence from these experiments shows that it is a very rare occurrence for bacteria to be in the salivary glands or the ducts leading from them. An attempt was made to collect secretions from the sub-maxillary and sublingual glands, but we found this difficult with the means then at hand. This work will be taken up later.

All of the work given above, then makes it appear probable that the production of the acid in these cases cannot be due to bacterial agencies. The question then arises: If these acids are produced in the glands, what are the reactions, or processes, that give rise to them? What is the nature of these acids?

We have not been able to devote much time to the solution of this question. We have, however, investigated the question as to whether much of this acid can be carbonic acid. Since Külz showed (7) that saliva can contain large quantities of carbonic acid which it gives up only with difficulty, it seemed possible that the acid in these cases under consideration might be only carbonic acid. If this were true, we should be able to remove the carbonic acid from the saliva by exhausting the gases from the saliva by means of the air pump.

Some preliminary experiments were made to determine whether carbonic acid can be removed completely from saliva in vacuo. A preliminary experiment showed that 5 c.c. of neutral saliva, diluted with 10 c.c. of distilled water, dissolves considerable carbon dioxide. A sample of 10 c.c. of neutral saliva was diluted with 20 c.c. of distilled water and carbon dioxide was passed into the solution for a few minutes. Fifteen cubic centimeters of this solution required 2.00 c.c. N/10 KOH in the presence of phenolphthalein to give a color as intense as that of a solution of 15 c.c. of distilled water, one drop of phenolphthalein and 0.02 c.c. of N/10 KOH solution. The other sample of 15 c.c. of saliva was evacuated 35 minutes at 50 mm. pressure. This solution then require 0.55 c.c. of N/10 KOH to give the color of the check test. Carbon dioxide was passed into another sample of 30 c.c. of this diluted saliva. Fifteen c.c. required 0.70 c.c. of N/10 KOH to give the pink color corresponding to the check test used above. The other 15.0 c.c. was evacuated 35 minutes at 50 mm. pressure; it then required 0.17 c.c. of N/10 KOH to give the pink color of the check test. These two experiments show that 75 per cent of the carbon dioxide dissolved in the saliva can be removed by exhausting the saliva 35 minutes at 50 mm. with a pump.

Thirty c.c. of this diluted saliva were made to dissolve carbon dioxide as above. Fifteen c.c. of this solution required 0.72 c.c. of N/10 KOH to give the color of the check test The other 15.0 c.c. were evacuated at 15 mm. for 35 minutes; it then required only 0.04 c.c. of N/10 KOH to give the color of the check test. Into

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7. Zeitschr. f. Biol., xiii, p. 321, 1887; see also Pflüger, Arch. f. d. ges. Physiol., i., p. 686, 1868.

another sample of 30 c.c. of this diluted saliva carbon dioxide was passed for about 15 minutes. Fifteen c.c. of this solution required 4.60 c.c. of the N/10 KOH to give the pink color of the check test. The other 15 c.c. was evacuated at 15 mm. for 35 minutes; it then required 0.15 c.c. of N/10 KOH to give the color of the check test.

Another saliva solution was saturated with carbon dioxide as above. This was exhausted at 5 mm. during 10 minutes. It then required only 0.10 c.c. of N/10 KOH to give the color of the check test.

It is evident then from the above experiments that saliva diluted with two volumes of distilled water will give up practically all of the dissolved carbon dioxide when evacuated at 15 mm. for about 35 minutes. With these experiments settled, we then analyzed some samples of saliva from our patients to determine if there were any appreciable amount of carbon dioxide dissolved in the saliva; in other words, to determine if the acidity of the saliva of our patients is due to any considerable extent to carbonic acid.

Dr. D. and Dr. C. each collected about 20 c.c. of saliva. Both samples were somewhat opalescent, Dr. H's saliva being more so. His saliva also frothed more than Dr. C's saliva.

As soon as the samples were collected, they were thoroughly stirred and two 5 c.c. portions were measured from each. Each of these portions was diluted with 10 c.c. of distilled water, which had been boiled and cooled to room temperature. One portion from each sample was then put into a vacuum desiccator and exhausted for 35 minutes at 15 mm. The other two portions were titrated with N/20 $Ba(OH)_2$, using one drop of phenolphthalein as indicator. The end point was taken as the color produced by 0.08 c.c. of N/20 $Ba(OH)_2$ in 15 c.c. of water containing one drop of the indicator. The end reaction in the salivas was not very sharp because of the cloudiness of the solutions. Duplicates were made on the samples which were not exhausted *in vacuo*. At the end of 35 minutes the portions in the vacuum desiccator were titrated in the same manner. The acidity not due to carbonic acid was calculated as acetic acid.

The following results were obtained by Mr. Louis A. Test, to whom we are greatly indebted for this work:

From Dr. H.

N/20 $Ba(OH)_2$ required to neutralize 5 c.c. of *fresh* saliva	(1) 2.03 c.c.
	(2) 1.94 c.c.
Average	1.98 c.c.
N/20 Ba $(OH)_2$ required to neutralize 5 c.c. of exhausted saliva	1.93 c.c.
N/20 $Ba(OH)_2$ required to neutralize carbonic acid in 5 c.c. of fresh saliva	0.05 c.c.
Acidity due to carbonic acid	0.00015 gm. 0.003 %
Acidity, not due to carbonic acid, calculated as acetic acid	0.0058 gm. 0.12%

From Dr. C.

N/20 $Ba(OH)_2$ required to neutralize 5 c.c. of *fresh* saliva	(1) 0.76 c.c.
	(2) 0.84 c.c.
Average	0.80 c.c.
N/20 $Ba(OH)_2$ required to neutralize 5 c.c. of exhausted saliva	0.75 c.c.
N/20 $Ba(OH)_2$ required to neutralize carbonic acid in 5 c.c. of fresh saliva	0.05 c.c.
Acidity due to carbonic acid	0.00015 gm. 0.003 %
Acidity, not due to carbonic acid, calculated as acetic acid	0.002 gm. 0.04%

The results of these experiments show that the samples of saliva were distinctly acid, and that practically all of the acidity was due to acids other than carbonic acid

A chemical examination of the saliva by Ewald's test, for lactic acid, which is formed by nearly all of the common mouth bacteria, failed to show the presence of lactic acid in any of these salivas. Check experiments showed that 0.15 c.c. N/10 lactic acid, or its sodium salt, in 1.0 c.c. saliva was sufficient to give Ewald's test for the lactic acid. A study of acid salivas by Doctors Hinkins,[8]

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[8] THE DENTAL REVIEW, April and August, 1905.

Cook and Buckley, showed that the dialyzed saliva contained only a trace of phosphates; the acidity of the saliva could not be attributed to the presence of dihydrogen phosphates. The determination of the nature of these acids must be left for the future. Other methods for isolating and identifying these acids and their salts must be established.

Even though the acids in the salivas of the individuals under consideration did not seem to arise from bacterial agencies, yet, to establish this point with certainty it was thought advisable to begin a study of the reactions brought about by pure and mixed cultures of certain mouth bacteria in definite culture media, in order to determine (1) the rate of formation of the acids by different bacteria in different media, and (2) the nature of the organic acids formed by the bacteria. The first of these objects is the one that will receive our attention in this communication, and we are continuing our researches on the second object and hope to report later. It is our intention to take up a study of the secretions from the individual ducts, and make a separate study of the action of bacteria on each, as well as on mixtures, as was done in the cases reported now.

Determination of the amount and kinds of acids produced by the common bacteria of the mouth when living upon certain foodstuffs.

To render the experiments uniform we grew cultures of these bacteria on two different media:

(1) Witte's Peptone, together with glucose and a small admixture of sodium sulphate, sodium phosphate, and sodium chloride, forms an excellent medium for the growth of such bacteria as B. acidi lactici, Sarcina lutea, Sarcina aurantia, Staphylococcus pyogenes aureus, B. coli communis, etc.

This medium is a typical example of the mixture of foodstuffs we eat. The albumins furnish the nitrogenous substances, some sulphur compounds, etc., and these together with the glucose and inorganic salts give an excellent food.

(2) Asparagin, when mixed with glucose or lactose, together with sodium sulphate, sodium phosphate, and sodium chloride, gives us another excellent medium for bacteria.

Solutions of different concentration were made up and inoculated with the various bacteria, and these produced acids of various concentration in the different media. Some of the media were inoculated with pure cultures of the above-mentioned organisms, while others were inoculated with cultures taken from typical examples of certain diseases of the teeth. These we shall speak of later. In some cases the cultures became contaminated to some extent, and it was noticed that a mixed culture of a number of organisms generally gave a stronger acid solution.

The strength of the acid was determined as follows: Each solution at the beginning was one liter in volume and was kept at constant temperature of 37° C., or body temperature. At the end of each twenty-four hours 10 c.c. of medium were removed by means of a sterilized pipette, and the amount of acid was determined by titration with decinormal sodium hydroxide in the presence of phenolphthalein; the amount of acid increased gradually until at the end of from seven to fourteen days it became constant, and the bacteria commenced to degenerate. The amount of acid produced in any case was so small that we could not work with the original solution to determine the kinds of acids, as it was too dilute. The entire liquid was then distilled at a low pressure (8 mm. at the end) and the distillates were made slightly alkaline and evaporated to dryness. Upon acidifying with sulphuric acid the organic acids were liberated and were tested qualitatively.

Among those present were acetic, lactic, butyric, valerianic, carbonic and formic acids and hydrogen sulphide, as well as others which we could not identify. The lactic acid was tested for by Wessener's modification of the Boaz method. (9) The formic acid was detected by its well-known property of forming a silver mirror when treated with an ammoniacal solution of silver nitrate. The acetic, valerianic, and butyric acids were identified by the boiling points and odors of their ethylesters. The hydrogen sulphide was recognized by its odor and by the property of blackening lead acetate paper. In the case of one solution we determined the amount quantitatively as lead sulphide.

The peptone media were made up as follows: a weighed amount of peptone was dissolved in 500 c.c. of water and brought to boiling. Some albumins were precipitated and filtered off. The glucose was added, together with some sodium sulphate, sodium chloride, and sodium phosphate, and the whole diluted to one liter, and sterilized at 100° C., and again in twenty-four hours. We made titrations of

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9. *Medicine,* I, No. 3, 1896.

these original solutions and found them to be slightly acid in all cases. Phenolphthalein was the indicator used in all experiments.

The following six solutions contained 20 gr. Witte's peptone, 10 gr. glucose, 0.7 gr. Na_2HPO_4, 0.7 gr. NaCl, and 0.7 gr. Na_2SO_4. Pure cultures of B. acidi lactici, Staphylococcus pyogenes aureus, Sarcina lutea, Sarcina aurantia, and B. coli communis were kindly furnished by Professor Jordan and Dr. Davies, of the Bacteriological Department of the University of Chicago. We thank these gentlemen for the kindly interest and advice tendered in this work.

Cultures were taken from typical cases of diseases of the teeth. For instance, No. 6 was taken from a boy seven years of age, from a cavity at the cervical margin under an old cement filling. No. 12 was taken from a woman's mouth in which every tooth was decayed at the cervical margin from molar to molar on both jaws; cement fillings would only last about six months; saliva decidedly acid; age about forty-two years. The spoon excavator was sterilized and the decay under the cement filling and at the cervical margin of the cavity was removed and the tube inoculated. No. 13 was that of a man seventy years of age. The gums were receded and the cementum was well exposed and the cavity running from enamel well up into the cementum. This cavity had been previously filled with cement. The same precaution was taken as before.

Al these cultures were examined from time to time by Prof. George W. Cook, of the Department of Bacteriology, and Dean of the Dental School of the University of Illinois, and reports were given us by him. We wish to thank him for the many favors shown us in this work.

After the solutions were inoculated with the culture they were kept at a constant temperature of 37° C., and a titration of the acid was made each twenty-four hours. In some cases quite a large amount of gas, probably CO_2, was formed, and hence in all titrations we made duplicates. The first was titrated in the cold; the second was brought to boiling to eliminate any CO_2, and cooled and titrated. Generally the amount of acid in the second case was smaller, but in some cases there was a "decided increase in the amount of acid upon boiling." Acree (10) and Hinkins, in noting this phenomenon as early as 1899 proposed the theory that the bacteria, or enzymes from

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10. *Dental Cosmos,* June, 1901.

them, bring about an ester formation from the sugar and organic acids present, or an amide formation from the organic acids and amino groups of the proteids, or their decomposition products. These esters or amides are neutral, but when boiled with water they could be saponified and there would consequently be more organic acid in the boiled solution to titrate against the alkali.

Since then Kastle (11) and Loevenhart, working on ethyl butyrate, and Acree (12) and Hinkins, working on triacetylglucose, have shown that certain enzymes cause a formation of these esters from the acid and alcohol, and also cause their hydrolysis in water solution. The enzymes seem to act as catalytic agents in effecting these reversible reactions, and doubtless bring about equilibrium in the system. The work of Buchner (13) and of Stoklasa (14) has made it very probable that enzymes in certain bacteria are also very active catalytic agents. The writers expect to pursue the study of the ester or amide formation by the bacteria.

We now give a table of the different solutions and the amount of acid they contained from day to day.

No. 1 Bacillus Acidi Lactici, in two per cent peptone, one per cent glucose, Na_2SO_4, Na_2HPO_4, NaCl, as given above; volume, 1 liter. Original solution was acid; 5.0 c.c. original solution = 0.5 c.c. deci-normal NaOH.

1st	day.	5 c.c. =	1.57	c.c.	deci-normal	NaOH;	boiled =	1.44	c.c.
2d	“	“	1.70	“	“	“	“	1.40	“
3d	“	“	1.65	“	“	“	“	1.45	“
4th	“	“	1.77	“	“	“	“	1.66	“
5th	“	“	1.81	“	“	“	“	1.50	“
6th	“	“	1.65	“	“	“	“	1.60	“
7th	“	“	1.85	“	“	“	“	1.68	“
8th	“	“	2.00	“	“	“	“	1.70	“
9th	“	“	1.80	“	“	“	“	1.75	“
10th	“	”	1.70	“	“	“	“	1.70	“

Examination showed the culture to be pure on the third and

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11. *Amer. Chem. Journ.*, XXIV, p. 491.
12. *Ibid*, XXVIII, p. 370.
13. Ber. d. Chem. Ges., XXX, pp. 117, 1110; XXXI, p. 568; Buchner and Rapp, *ibid*, XXX, p. 2668; XXXI, pp. 209, 1084, 1090, 1531; Buchner, *ibid*, XXXVIII, p. 620.

ninth days, so we may assume that we had a pure culture throughout the time.

No. 2. Staphyloccus pyogenes aureus, in same solution as above.

1st	day.	5 c.c. =	.94	c.c.	deci-normal	NaOH;	boiled =	.82	c.c.
2d	“	“	1.15	“	“	“	“	1.05	“
3d	“	“	1.35	“	“	“	“	1.20	“
4th	“	“	1.40	“	“	“	“	1.20	“
5th	“	“	1.20	“	“	“	“	1.30	“
6th	“	“	1.50	“	“	“	“	1.25	“
7th	“	“	1.40	“	“	“	“	1.30	“
8th	“	“	1.40	“	“	“	“	1.39	“
9th	“	“	1.30	“	“	“	“	1.35	“

No. 2 was examined on the third and ninth days, and was found to be a mixed culture with staphylococcus in excess.

No. 3. Sarcina Lutea in same solution as above.

1st	day.	5 c.c. =	1.00	c.c.	deci-normal	NaOH;	boiled =	.94	c.c.
2d	“	“	1.83	“	“	“	“	1.60	“
3d	“	“	1.95	“	“	“	“	1.83	“
4th	“	“	1.90	“	“	“	“	1.70	“
5th	“	“	2.00	“	“	“	“	1.75	“
6th	“	“	1.85	“	“	“	“	1.85	“
7th	“	“	1.40	“	“	“	“	1.30	“
8th	“	“	1.65	“	“	“	“	1.94	“
9th	“	“	1.75	“	“	“	“	1.79	“

No. 3 was examined on the third and ninth days, and was found to be a mixed culture.

No. 4. Sarcina Aurantia, in the same medium as above.

1st	day.	5 c.c. =	.66	c.c.	deci-normal	NaOH;	boiled =	.52	c.c.
2d	“	“	1.00	“	“	“	“	.88	“
3d	“	“	1.20	“	“	“	“	.97	“
4th	“	“	1.30	“	“	“	“	1.25	“
5th	“	“	1.25	“	“	“	“	1.24	“
6th	“	“	1.45	“	“	“	“	1.00	“
7th	“	“	1.50	“	“	“	“	1.68	“
8th	“	“	1.60	“	“	“	“	1.60	“

No. 4, at the end, was a mixed culture with staphylococcus in excess.

No. 5. Coli Communis, in the same medium as above.

1st	day.	5 c.c. =	.65	c.c.	deci-normal	NaOH;	boiled =	.57	c.c.
2d	“	“	.83	“	“	“	“	.75	“
3d	“	“	1.00	“	“	“	“	.95	“
4th	“	“	1.30	“	“	“	“	1.05	“
5th	“	“	1.55	“	“	“	“	1.15	“
6th	“	“	1.50	“	“	“	“	1.40	“
7th	“	“	1.50	“	“	“	“	1.60	“
8th	“	“	1.70	“	“	“	“	1.60	“

This culture remained pure throughout.

No. 6. Culture taken from the boy seven years old; medium same as above.

1st	day.	5 c.c. =	.80	c.c.	deci-normal	NaOH;	boiled =	.80	c.c.
2d	“	“	1.20	“	“	“	“	1.10	“
3d	“	“	1.20	“	“	“	“	1.15	“
4th	“	“	1.80	“	“	“	“	1.67	“
5th	“	“	2.18	“	“	“	“	1.90	“
6th	“	“	2.40	“	“	“	“	2.30	“
7th	“	“	2.45	“	“	“	“	2.45	“
8th	“	“	2.60	“	“	“	“	2.69	“
9th	“	“	2.78	“	“	“	“	2.80	“
10th	“	“	2.80	“	“	“	“	3.00	“
11th	“	“	3.03	“	“	“	“	2.97	“

At the fourth day it had B. pyogenes Genicoccus, micrococcus, and budding fungi. At the eleventh day it had also pure yeast fungi.

No. 7 was B. Acidi Lactici in 5 per cent peptone, 3.8 per cent glucose, and 0.5 per cent each of Na_3PO_4, NaCl, Na_2SO_4.

1st	day.	5 c.c. =	2.90	c.c.	deci-normal	NaOH;	boiled =	2.75	c.c.
2d	“	“	3.95	“	“	“	“	3.60	“
3d	“	“	3.55	“	“	“	“	3.45	“
4th	“	“	3.70	“	“	“	“	3.63	“
5th	“	“	3.64	“	“	“	“	3.50	“
6th	“	“	3.75	“	“	“	“	3.85	“
7th	“	“	3.75	“	“	“	“	3.49	“
8th	“	“	3.80	“	“	“	“	3.90	“
9th	“	“	3.68	“	“	“	“	3.75	“
12th	“	“	4.78	“	“	“	“	4.66	“
13th	“	“	5.67	“	“	“	“	5.35	“
14th	“	“	5.70	“	“	“	“	5.40	“

15th	"	"	5.84	"	"	"	"	5.82	"
16th	"	"	5.70	"	"	"	"	5.70	"
17th	"	"	6.00	"	"	"	"	5.80	"
20th	"	"	6.40	"	"	"	"	6.40	"

No. 7 remained a pure culture throughout.

No. 8 was Sarcina Lutea in the same medium as No. 7.

1st	day.	5 c.c. =	1.88	c.c.	deci-normal	NaOH;	boiled =	1.50	c.c.
2d	"	"	1.80	"	"	"	"	1.75	"
3d	"	"	3.20	"	"	"	"	2.50	"
4th	"	"	3.00	"	"	"	"	3.15	"
5th	"	"	3.15	"	"	"	"	3.00	"
6th	"	"	2.95	"	"	"	"	....	"
7th	"	"	2.95	"	"	"	"	3.04	"
8th	"	"	3.05	"	"	"	"	3.00	"
9th	"	"	2.97	"	"	"	"	3.01	"
10th	"	"	3.00	"	"	"	"	3.40	"
11th	"	"	2.95	"	"	"	"	2.80	"
12th	"	"	2.90	"	"	"	"	2.88	"
13th	"	"	3.00	"	"	"	"	3.38	"
14th	"	"	2.70	"	"	"	"	3.16	"
15th	"	"	2.80	"	"	"	"	3.16	"
16th	"	"	3.00	"	"	"	"	3.00	"

On the second day the culture was pure, but on the sixteenth day it was very much mixed, containing a large quantity of micrococcus.

No. 9. Same culture as No. 6, namely, the one from the boy seven years old, and in the same culture medium as Nos. 7 and 8.

1st	day.	5 c.c. =	1.90	c.c.	deci-normal	NaOH;	boiled =	1.45	c.c.
2d	"	"	1.80	"	"	"	"	1.75	"
3d	"	"	2.20	"	"	"	"	2.18	"
4th	"	"	3.15	"	"	"	"	3.45	"
5th	"	"	3.30	"	"	"	"	3.30	"
6th	"	"	3.20	"	"	"	"	3.30	"
7th	"	"	3.35	"	"	"	"	3.30	"
8th	"	"	3.25	"	"	"	"	3.10	"
9th	"	"	3.35	"	"	"	"	3.55	"
10th	"	"	3.16	"	"	"	"	3.08	"
11th	"	"	3.38	"	"	"	"	3.45	"
12th	"	"	3.20	"	"	"	"	3.30	"

No. 9 had at least three different kinds of organisms.

No. 10. B. Acidi Lactici in a medium of 1 per cent asparagin, 2 per cent lactose, and .01 per cent each of NaCl, Na_2SO_4, Na_2HPO_4.

This medium titrated as follows: 5 c.c. = 1.5 c.c. deci-normal NaOH.

1st	day.	5 c.c. =	2.12	c.c.	deci-normal	NaOH;	boiled =	2.03	c.c.
2d	“	“	2.00	“	“	“	“	2.20	“
3d	“	“	2.50	“	“	“	“	3.13	“
4th	“	“	2.15	“	“	“	“	2.37	“
5th	“	“	2.09	“	“	“	“	2.32	“
6th	“	“	2.00	“	“	“	“	2.35	“
7th	“	“	1.75	“	“	“	“	1.85	“

No. 10 remained pure throughout.

No. 11. B. Acidi Lactici, in the same medium as No. 10, except that glucose was substituted for lactose.

1st	day.	5 c.c. =	2.00	c.c.	deci-normal	NaOH;	boiled =	2.00	c.c.
2d	“	“	2.30	“	“	“	“	2.28	“
3d	“	“	2.52	“	“	“	“	2.50	“
4th	“	“	2.55	“	“	“	“	2.45	“
5th	“	“	2.32	“	“	“	“	2.63	“
6th	“	“	2.30	“	“	“	“	2.45	“
7th	“	“	2.00	“	“	“	“	2.40	“
8th	“	“	2.10	“	“	“	“	2.30	“
9th	“	“	1.90	“	“	“	“	1.75	“

No. 11 remained pure throughout.

No. 12. Culture taken from the teeth of a lady forty-two years old, the medium being the same as for No. 10.

1st	day.	5 c.c. =	1.80	c.c.	deci-normal	NaOH;	boiled =	1.81	c.c.
2d	“	“	1.84	“	“	“	“	1.74	“
3d	“	“	2.00	“	“	“	“	2.00	“
4th	“	“	2.70	“	“	“	“	2.60	“
5th	“	“	3.40	“	“	“	“	3.48	“
6th	“	“	3.25	“	“	“	“	2.85	“
7th	“	“	3.10	“	“	“	“	3.10	“
8th	“	“	3.00	“	“	“	“	2.80	“
9th	“	“	3.20	“	“	“	“	3.00	“
10th	“	“	3.20	“	“	“	“	3.64	“
11th	“	“	3.00	“	“	“	“	3.50	“

No. 12 was a mixture throughout.

No. 13. Culture taken from a man seventy years old, and in the same medium as Nos. 11 and 12.

1st	day.	5 c.c. =	1.90	c.c.	deci-normal	NaOH;	boiled =	1.73	c.c.
2d	“	“	2.30	“	“	“	“	1.80	“
3d	“	“	2.04	“	“	“	“	2.20	“
4th	“	“	2.10	“	“	“	“	2.25	“
5th	“	“	2.22	“	“	“	“	2.20	“
6th	“	“	1.60	“	“	“	“	2.05	“
7th	“	“	1.70	“	“	“	“	2.20	“
8th	“	“	1.80	“	“	“	“	1.70	“
9th	“	“	2.00	“	“	“	“	1.70	“
10th	“	“	2.30	“	“	“	“	2.40	“
11th	“	“	2.00	“	“	“	“	2.00	“

No. 13 is peculiar in that at the end it had a fine, nearly pure culture of leptothrix threads.

We will not go further into the details of the detection of the individual acids in each of the above solutions, as we shall continue this work and hope to present the results in the near future. Suffice it to say that we have found lactic, butyric, valerianic, acetic, formic, carbonic and hydrosulphuric acids, making special tests for each.

The strongest acid solution above is N/8, while the others decrease to N/25. Although the writers do not feel that the time required for the formation of acids of this strength by the bacteria would justify them in ascribing the acidity of many salivas to bacterial agency, yet these acids are strong enough, when formed in cavities, to cause erosion and decay of the tooth structure or of cement fillings. We (15) believe that cavities in general are produced by this cause. Foodstuffs and bacteria collect at such places, the bacteria form the acids from the foodstuffs, and the process of dissolving out the cement or tooth structure begins. As the cavity becomes deeper it becomes more and more difficult to remove the cause of the trouble, the bacteria, and consequently the cavity becomes larger. That acids of this strength can dissolve cement fillings was proved by the following experiments: As the solvent we selected an average of the above solutions, namely, a N/12 solution of a mixture of nearly equal parts of acetic, lactic, butyric and valerianic acids, and tested samples of cements with 50 c.c. of this acid mixture. 1.6695 gr. of a Justi cement, when treated forty-eight hours with this mixture, lost 0.2066 gr., or 12 per cent. Of this 0.2066 gr. there were

0.1370 gr. of ZnO and 0.0540 gr. $Zn_3(PO_4)_2 \cdot 4H_2O$. This was proved by a method elsewhere described for separating the constituents of the cements, and does not need repetition.

1.2540 gr. of a sample of Ames's cement lost 0.1985 gr. in forty-eight hours when treated with the above acid mixture. Of this, 0.1485 gr. was ZnO and 0.0490 gr. was $Zn_3(PO_4)_2 \cdot 4H_2O$.

A sample of Weston's cement lost 6 per cent in seventeen hours; or, 1.6378 gr. lost 0.1005 gr.

A sample of cement made from pure ZnO and glacial phosphoric acid, when treated according to above method, lost 47 per cent, or 1.6170 gr. lost 0.7605 gr., in forty-eight hours. An air-dried sound tooth weighing 1.64349 grams was left in 100 c.c. one per cent lactic acid (N/9) during thirty days. The tooth was then washed well and allowed to dry in the air. It weighed 1.006 gram and had lost about 40 per cent of its weight. It appeared to be nearly completely decalcified. The writers feel that the slowness of the formation of acids by these bacteria would not justify us in assuming that bacteria play an important role in the production of the acids found in the salivas of the individuals under investigation. There are many individuals, however, who have very unclean mouths. They have much decayed matter collected on the teeth in which bacteria collect, and they never cleanse off the foodstuffs from the teeth. As a result the bacteria have abundant chance to generate organic acids and these pass into the saliva, and help to dissolve away cements and tooth structure. But the acidity in the saliva caused by this means is probably very small—that is, the acidity of the saliva of the individuals under our care comes from another source.

ON THE FORMATION OF ACIDS BY ENZYMES.

The saliva contains some acids under normal conditions; it has been shown that nuclein (16), leucin, xanthin, and volatile fatty acids, acid phosphates, bicarbonates, and sulphocyanic acid are present in small quantities. The large amount of acid present in the salivas of our patients may be due to an unusual activity of the enzymes of the saliva, or to the presence of a large amount of substances, secreted by the salivary glands, which can be very readily hydrolized by these enzymes. On the other hand, it may be that under the abnormal conditions undoubtedly present in our patients, the glands can exercise a selective secretion of acid salts from the blood, or that within these glands themselves there is formed, abnormally, a larger amount of acids than usual. Our experiments, of course, do not give any evidence on this. The amounts of these organic acids probably vary with change of health, and change in age, and certainly vary greatly among individuals. When we consider that in abnormal constitutional conditions this amount may be greatly increased it is not surprising that such erosions of the teeth are more marked in some individuals than in others.

In order to try to secure evidence as to whether the enzymes of the saliva can hydrolyze any compounds rapidly enough to account for the acidity of the saliva of our patients we subjected triacetyl glucose, a substance hydrolyzed very readily indeed, to the action of a large number of "commercial" enzymes. These commercial preparations are only weakly active, when compared with the freshly prepared extracts from the glands, but on the other hand triacetyl glucose is probably far more readily hydrolyzed than any of the compounds secreted by the salivary and mucous glands. The weakness of the hydrolyzing power of our commercial enzymes, compared with the enzymes actually in the saliva, may be counterbalanced by the more ready hydrolysis of such a substance as the triacetyl glucose. We expect to begin experiments in which the rapidity of the hydrolysis of triacetyl glucose, and other substances, by the fresh saliva of our patients can be measured. We do not claim these experiments to be more than very roughly qualitative in value, but they are not without interest. Every enzyme examined was able to hydrolyze triacetyl glucose into acetic acid and glucose. Pancreatin and ptyalin were very active, whereas others like emulsin and diastase were not so active.

In order to show the varying activity of these different commercial enzymes, we (17) present a short table of the determinations of the acidity produced by the different enzymes when acting upon a triacetyl glucose solution which was at first N/42.50 acid, and which was kept sterile by means of toluene and thymol.

Enzyme.	Time.	Strength of Acid Solution.
Pancreatin	10 days	N/21
Amylopsin	10 "	N/25
Emulsin	11 "	N/40.5

Maltase	14 "	N/22.2
Diastase	12 "	N/33
Takadiastase	7 "	N/27

From these experiments one thing is clear; unless the enzymes of the saliva, in nascent condition, so to speak, act far more rapidly on hydrolyzable products in the saliva than we have cause to suspect, this hydrolysis cannot be the source of the acids found in the saliva of our patients. The saliva is present in the glands and mouth too short a time to allow so much to be produced. It may be that the enzymes, at the moment of formation, are far more active, or that there are products in the cells of the salivary glands that are practically instantly hydrolyzed under the existing conditions. In the succeeding pages are some further experiments along this line. They are given to show that enzymes *can* produce enough acid to dissolve cements or tooth structure. If then the acidity of the saliva of our patients is due to the activity of enzymes it is to be expected that these acid solutions would cause erosion. But as pointed out above, the source of the acids in the saliva may not have any connection with the activity of the enzymes of the saliva; the acids may be produced in other ways, to be determined in the future.

In order to establish a definite connection between the activity of the enzymes and the failure of cements, we instituted the following experiments: a neutral peptone solution of triacetyl glucose was subjected to the action of commercial pancreatin and ptyalin. The acidity increased regularly and was measured from time to time. The following experiments show how large is the production of acids by these enzymes: Glucose (40 grams) and acetic anhydride (120 grams) were heated on a water-bath half an hour, to dissolve the glucose. The solution was then poured into 250 c.c. of hot water, evaporated to about one-third of its original volume, neutralized with N/KOH solution and diluted to 1 liter. Two hundred and fifty c.c. of this solution, together with 50 c.c. of 1 per cent bouillon, were treated with 5 grams of ptyalin or pancreatin. The liquids were placed in an ice-box, a check was kept on the original triacetyl glucose bouillon solution and all of them were maintained sterile by means of toluene and thymol.

PTYALIN SOLUTION.

Time in days.	N/10 KOH required for 10 c.c. solution.	N/10 KOH required for original triacetyl glucose bouillon solution.
	c.c.	c.c.
9	8.50	3.50
17	11.00	4.00
26	13.00	4.60
32	13.90	4.75
	PRECIPITATE FILTERED OUT.	
40	13.75	5.50
47	13.75	5.60

PANCREATIN SOLUTION.

Time in days.	N/10 KOH required for 10 c.c. solution.	N/10 KOH required for original triacetyl glucose bouillon solution.
0		2.50
5	8.00	3.00
9	9.00	3.50
17	12.00	4.00
26	14.50	4.60
32	14.84	4.75
	PRECIPITATE FILTERED OUT.	
40	14.75	5.50
47	14.50	5.60

In order to learn the combined effect of bacteria and enzymes on the peptone solution, other portions of the above liquids, containing pancreatin and ptyalin, were treated with cultures of bacteria taken from the mouths of individuals having severe cases of tooth erosion. The solutions were kept at 37° C., the body temperature and titrated at intervals. It will be seen from the following tables that, even in a shorter time the presence of the bacteria causes a rise in acidity.

PTYALIN-BACTERIA SOLUTION.

Time in days.	N/10 KOH for 10 c.c. solution.
	c.c.
6	9.50
14	12.00
21	13.75

PANCREATIN-BACTERIA SOLUTION.

Time in days.	N/10 KOH for 10 c.c. solution. c.c.
6	11.25
14	16.50
21	19.00

After filtration from the commercial enzymes the solutions resemble saliva in composition, differing, however, in being more acid. That these filtered enzyme and enzyme-bacteria solutions, and therefore probably salivas made acid by enzymes, can dissolve cements and tooth structure and cause erosions of the teeth is shown by the following experiments:

To portions of these solutions (50.0 c.c.) were added pellets of Harvard cement, which had been made as usual for teeth-fillings and had set, and also the finely powdered cement obtained by grinding up other pellets. The solutions were allowed to stand several days at 0° C, and the loss in weight of the cement was then determined. It is to be noted that the powdered cement was dissolved much more rapidly than the pellets on account of the greater surface exposed. Again it must be pointed out that since these solutions are much more acid than the saliva, and since the cements are more exposed to the action of the acid, the amount dissolved is many times that lost by a cement filling in a tooth. The difference, however, is one of degree only and it must be pointed out that we have some patients under our care who have very acid saliva and in whose mouths cement fillings last only a very short time. But the experiments show clearly that the more acid the solution the greater is the amount of erosion produced.

Time.	Ptyalin Solution.	Weight of Cement.		Loss.
0 days	50 c.c.	0.6793 gm.	(pellet)	
8 "	50 "	0.6505 "	"	0.0288 gm.
0 "	50 "	1.000 gm.	(powdered)	
8 "	50 "	0.927 "	"	0.0730 "

PANCREATIN SOLUTION.

Time.	Pancreatin Solution.	Weight of Cement.	**Loss.**
0 days	50 c.c.	0.5767 gm. (pellet)	
8 “	50 “	0.5400 “ “	0.0367 gm.
0 “	50 “	1.000 gm. (powdered)	
8 “	50 “	0.860 “ “	0.140 “

PTYALIN-BACTERIA SOLUTION.

Time.	Solution.	Weight of Cement.	Loss.
0 days	50 c.c.	1.000 gm. (powdered)	
7 “	50 “	0.825 “ “	0.175 gm.
0 “	50 “	0.2618 gm. (pellet)	
7 “	50 “	0.2255 “ “	0.0363 “

PANCREATIN-BACTERIA SOLUTION.

Time.	Solution.	Weight of Cement.	Loss.
0 days	50 c.c.	1.0000 gm. (powdered)	
7 “	50 “	0.7430 “ “	0.257 gm.
0 “	50 “	0.2608 gm. (pellet)	
7 “	50 “	0.2080 “ “	0.0528 “

The results of these experiments with the commercial enzymes and triacetyl glucose tend to make it doubtful that the enzymes in the saliva can hydrolyze substances in the saliva rapidly enough to furnish the amount of acid found in the saliva of our patients. Just how these changes take place we cannot, of course, say at present. The problem of first importance is to determine the kinds and amounts of acids present, and their changes with conditions affecting the food, health and habits of the individuals.

CONCLUSIONS.

1. A study of the saliva of certain individuals suffering from general erosion of the teeth shows that in these individuals the severity of the erosion is proportional to the acidity of the saliva. The acidity of the saliva is not due, to any appreciable extent, to carbonic acid. By catheterizing Steno's duct, it was shown that the secretion obtained is, in general, about as acid as the total saliva. A bacteriological examination of the secretion from Steno's duct showed this duct to be in seven individuals free from bacteria.

2. (a) A study of the amount of acids produced by certain

mouth bacteria in given culture media shows that different bacteria generate acid solutions of different strengths from N/25 to N/8.

(b) The slowness with which these acids are produced, together with the conditions maintained by the patients precludes the possibility that bacteria are greatly concerned in the formation of the acids found in the salivas of the individuals under our care.

(c) Certain bacteria seem to cause the organic acids to react with the glucose or amino compounds and form esters or amids which are hydrolyzed by hot water.

3. (a) Many enzymes cause the hydrolysis of triacetyl glucose into glucose and acetic acid.

(b) The slowness of the formation of acids by the commercial enzymes makes it questionable whether the acidity of the salivas of our patients is the direct result of the hydrolysis of compounds in the saliva by the enzymes present.

(c) Enzymes may be indirectly concerned in the formation of the acids found in the salivas under investigation.

(d) Commercial enzymes can produce acids of sufficient strength to cause erosion of cement fillings and tooth structure.

ALVEOLAR ABSCESS.*

BY CHARLES P. PRUYN, M. D., D. D. S., CHICAGO.

The word abscess is from the Latin word *abscessus,* or *abscedo,* a going away, or to go away. Medically, it means a gathering of pus in any tissue or organ of the body; also a going away or departure of portions of the animal tissue from each other to make room for the suppurative matter lodged between them.

As there may be abscess of the alveolus not of dental origin, the writer would define what he means by the term alveolar abscess, and thus avoid misunderstanding. By alveolar abscess is meant an abscess of, or in the alveolus, of a dental origin, the result of the death of the tooth pulp and putrefactive decomposition of the same, which results in mephitic gases that seek an egress or exit from the pulp chamber and canal, and following the law of least resistance enter the cancellous tissue of the alveolus at what is commonly called the apical space or the territory adjacent to the apex of the tooth involved. This disease is one of the oldest known to mankind, and, from the best information and research available, seems to have spared no race of people nor condition of society.

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*Read before the Chicago-Odontographic Society, January, 1908.

The geologist reads the history of the earth by the rocks and stones; the anthropologist and the anatomist read the history of the early man and the prehistoric man, by the appearance and condition of his bony framework that has withstood the ravages of the centuries, and they find plenty of evidence that the ancient Egyptians, Romans, Etruscans, and all other peoples have suffered from alveolar abscess about the same as we do now.

From the standpoint of the surgeon and the therapeutist of today, the treatment of the past has been largely empirical, and the only sure cure was to extract the tooth that caused the trouble. It has only been within the memory of many men of today that any attempt has been made to successfully treat this disease. And even now, with all our enlightenment as to its etiology, pathology, bacteriology and treatment, our failures to combat this disease are often as great as our successes, and these failures are largely due to lack of diagnosing the diseased conditions; and, also, from our stereotyped methods of treating them. In looking over the literature pertaining to the treatment of alveolar abscess, we find much of it so very empirical in its method that we wonder how Dame Nature tolerated such abuses and allowed the healing processes to go on at all.

In 1733 Fouchard mentioned alveolar abscess and the cure of the same by extracting the tooth that seemed to be the cause of the disturbance; but he said nothing about the pulp of the tooth as being in any way directly or indirectly the cause of the abscess.

In 1801 Benjamin Bell published a treatise on surgery, which also included dentistry, wherein he spoke of blood-letting, the use of leeches, scarification of the gums, and the application of blisters behind the ears, etc., etc., etc., without apparently understanding at all the cause of the pain that we know to be due to apical pericementitis, and, later, to alveolar abscess. And for the next fifty years there seems to have been but little advancement made in the knowledge and treatment of this disease.

Somewhere about 1850 the generally accepted treatment was to drill a vent-hole just beneath the border of the gums into the pulp chamber or canal, and allow the putrefactive gases to escape, which often relieved the trouble, temporarily, at least. That custom was very prevalent for twenty-five or thirty years; and, occasionally, even now, some so-called dentists resort to this treatment.

Of course, the successful treatment of alveolar abscess did not occur until after the contents of the pulp chamber and canal were entirely removed and left sterile and filled with some indestructible matter. In looking over the journals it seems to be doubtful who was the first one to advocate this treatment. Indeed, it was undoubtedly a gradual development on the part of several men rather than the result of any one man's inventive genius. Creosote seems to have been the great sterilizing agent used for many years, and the practice of filling the canals with silk floss or cotton saturated in this drug prevailed for a long time, and is still favored in some of the eastern states. Most everything known to mortal man has been used as a root canal filling, including the above-mentioned silk and cotton and also zephyr yarn, tin, lead, gold in the form of foil and wire, amalgam, different kinds of wood saturated in different kinds of drugs and different kinds of balsams, gums, gutta percha, chloropercha, oxychloride, and oxyphosphate of zinc, etc., etc. But the perfect root canal filling is still to be discovered. At one time Dr. Harlan recommended the use of lead as the very best canal filling, and advised crowding a little of it beyond the apex, where it would set up an inflammation and be cast off and leave a healthy tract behind.

It is not always easy to locate the source of a pus discharge from the alveolus, but the X-ray is a very important agent, as is also the silver probe. A spring gold wire probe similar to the arm-piece of a spectacle frame may be used in following the fistulous tract; but as an aid in diagnosing the condition of the bone to determine whether it is carious or necrotic, a steel probe is by far the best.

During all our evolution in the treatment of this disease, we have had to combat the trouble of properly opening up, cleaning and enlarging tortuous canals, which are often so very minute and so occluded with secondary dentine or other calcific matter, that it has been very difficult to always get the canals in proper shape to thoroughly fill them just to the end. But, fortunately, we are doing better work in this particular today than ever before in the history of dentistry. A good method of procedure is to adjust the rubber dam and then open up the cavity of decay in the tooth sufficiently well to allow of easy access to the pulp chamber and entrance to the canal; then wipe out the cavity with alcohol; then follow with kresol and formalin, or some of the essential oils as germicides, and remove all the debris carefully, so as to avoid crowding any of the foreign matter through the apical foramen. Usually it is better not to attempt to remove all the foreign matter at the first sitting, but remove all that in your judgment seems best, without forcing it through the apical foramen; then apply a dressing of kresol and formalin, as suggested by Prof. J. P. Buckley, and seal up the cavity with a temporary stopping of some kind for a week. At the next treatment remove all foreign matter from the canal and repeat the same treatment for another week, and if all is going nicely at that time, proceed to fill the roots permanently with sandarac varnish and gutta percha points, and insert a temporary filling in the cavity of decay for a few weeks, after which a permanent filling or inlay or crown can be made, as the case requires. If, however, the canals are difficult of access or are occluded by secondary dentine, the use of the engine bur or drill to assist in gaining entrance is advisable, if great care is exercised in its use. Commercial H_2SO_4 may be used to assist in locating and gaining entrance to the canals. Neutralize the H_2SO_4 with a saturated solution of KHO, after which use alcohol to wash out the KHO. Peroxide of hydrogen should never be used in blind abscesses, because of its expansibility when brought in contact with the products of putrefactive decomposition. If there is a fistulous opening, it is well to wash out the fistulous tract with some cleansing liquid. If the case is of recent origin, and there seems to be no complications, the washing of the abscess and tract with a solution of common table salt, and closing of the canals with the before-described filling, will usually effect a cure. But in old chronic cases, with possibly some dyscrasia, something more vigorous than the salt water solution is recommended. The old remedy of our fathers, namely, carbolic acid, although severe, is often successful in such cases, where milder remedies have failed. Eucalyptol, eugenol, oil of cloves, and drugs of this class are often indicated in this class of cases. Of course, all calcific and especially serumal calculus should be thoroughly removed as early in the treatment of the case as it is practicable to do so, for if the serumal deposits are not removed, a cure cannot be effected. There is a class of cases which often fail of treatment, even though the general constitutional conditions are all favorable, and this class is often very troublesome to both patient and operator, and the cause generally is that at the time of the initial disturbance the peridental membrane is lifted from its position and has undergone retrogressive changes, so that its vitality is destroyed to a greater or less extent, sometimes entirely surrounding the apex, and at other times only on one side; but to that extent that the odontoclasts are busily engaged in the molecular destruction of the root, leaving a markedly roughened surface that acts as a continual irritant and is the cause of more or less discomfort. The successful treatment of such cases can be brought about by amputating the apex and curettement of the stub end of the root and surrounding tissues. It is not such a formidable operation as many think it to be; indeed, ordinarily it is very simple and not very painful. It can be done under nitrous oxide or even under cocaine anesthesia very nicely. If the abscess should be on the lingual root of an upper molar, and it should be diseased as above described, the amputation and removal of the whole root would be indicated. This also can be done very easily with a fissure drill and the root removed with a fine bayonet forceps. It is better to fill the canal before amputating, as it can be done better at that time.

The modus operandi is usually as follows: Wipe off the field of operation with alcohol; then make a crucial incision over the root of about a quarter of an inch in length for each incision; then with a spear-shaped drill in the engine go through the alveolus and through the root; then in the drill hole insert a fissure bur and oscillate it laterally until you feel confident the apex is cut off. Oftentimes it is best to follow up with a round bur and cut up and destroy the amputated part, as it is not always expedient to remove that part with forceps, and, indeed, it is not always necessary to do so, as frequently nature will take care of it, either by sloughing it off *en masse,* or by destroying it molecule by molecule.

It is not always possible to abort an alveolar abscess, but in those cases of apical pericementitis that show a positive determination toward pus formation, it is often desirable to ameliorate the condition by taking a sharp, strong bistoury and cutting through the gum tissue and alveolus directly to the root ends, and thus prevent the lifting of the peridental membrane from its normal position, and, at the same time, allow for easy drainage some hours later. If, however, the process is thick and tough and the bistoury fails to deeply penetrate the alveolus to the seat of injury, immediately insert a fairly large spear-shaped drill in the opening already made, and complete the operation in this way. The operation should be performed very rapidly, so as to make it as easy as possible for the patient. If this operation were more frequently performed, there would be fewer cases of apical peridental membrane destruction and consequent roughening of the root apices.

In cases of multirooted teeth, where only one root is involved in the trouble, it is better to fill the healthy root canal as soon as it is convenient to do so, and thus avoid the possibility of infection from the diseased one. As an aid in the treatment of badly broken-down teeth, it is often desirable to fit loosely into the mouth of the canals large gutta percha cones, extending beyond the normal occlusal line; then pack cement around the cones, and build up a modified crown. After the cement has hardened, remove the cones and treat through the artificial canals you have made that lead directly to the natural ones.

In reviewing dental literature it is difficult to tell who was the first to advocate amputation of the apical ends of the roots of teeth for the cure of this disease, but it seems that Magitot, of Paris, practiced this method twenty-five or thirty years ago very extensively.

In discussing this subject it has been necessary to speak of root canal fillings, as it is difficult to write of the treatment of alveolar abscess without mentioning how, when and why the canals should be filled.

In dealing with alveolar abscess it should be remembered that we have to treat a part of the whole general system, and while it is positively essential to a cure that the local needs should be met, it is also well to look to the general condition of the patient, and administer proper treatment according to the indications of the case. Pus formation usually shows itself by a rise in temperature, and the use of a clinical thermometer by the dentist should be encouraged more than it is at the present time.

The bowels, the kidneys and the skin should be stimulated to assist in the removal of the poisonous products of the disease under consideration. The long-continued over-treatment of alveolar abscess often causes a permanent injury to the peridental membrane and surrounding tissues that can never be obliterated, and has a tendency to leave the proverbial lame tooth in its wake.

Definite, positive, aseptic treatment and plenty of time for the tissues to regain their normal condition between treatments are essential to a cure.

MALOCCLUSION OF TEETH.*

BY ELLIOTT R. CARPENTER, D. D. S., CHICAGO, ILL.

Mr. President and Gentlemen:

In presenting for your consideration this evening the subject of malocclusion of teeth, I do so with the feeling that the profession at large are not cognizant of the many complications emanating from this anatomical phenomenon which are so far reaching in their pathological effects that organs entirely remote to the oral cavity are frequently the seats of the most distressing pain. Malocclusion may be divided into the following divisions.: Pre-natal, heredity (syphilitic), thumb sucking.

Causes: Premature extraction of deciduous teeth; extraction of first permanent molar after second permanent molar is in place; prenatal influences caused by shock resulting from fright and physical injury to mother during pregnancy.

Having been fortunate in acquiring a case of malocclusion from prenatal influence which seemed to me to be very clear and exact in its history, and at the same time most rare, I deem it my professional duty to present the history and models for your deliberation and later discussion.

The patient, a girl fifteen years of age had never acquired (according to the mother) more than one-half of the deciduous teeth, and upon examination at this time, I found there were missing both lateral incisors and both first bicuspids upon the upper jaw, also both second bicuspids and both first molars on the lower jaw. Plaster models were then made and after considerable study of skiagraphs and models, I approached the mother as to the possibility of the case being one of prenatal influences, assuring her it was in the interest of science that I desired to know and craved her aid in enlightening me, explaining that the germs of deciduous teeth were deposited in the jaws of the foetus at about the sixth week of foetal life. She recalled that between the sixth and seventh week of her pregnancy of this child she had spilled a bottle of carbolic acid upon her breasts and was most cruelly burned, suffering excruciating pain. Upon interrogation as to her other children, her ancestors, and the father's ancestry none of them had ever failed to have the normal number of teeth and all of very good quality.

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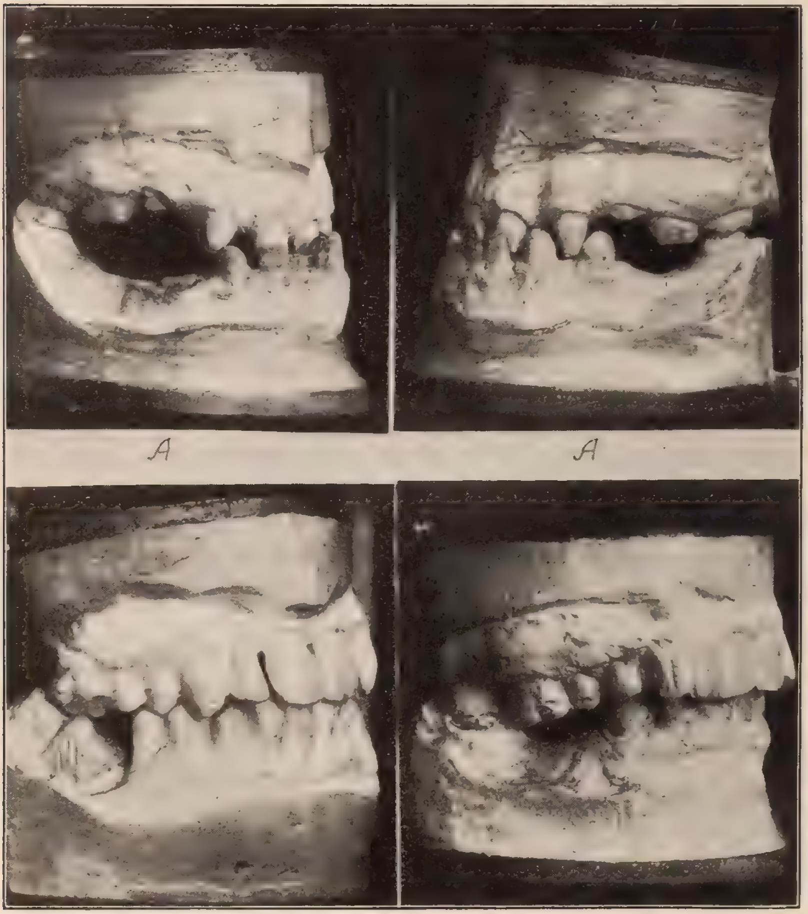
*Read before the Odontological Society of Chicago, January 14, 1908.



You will notice from models "A" there was a marked protrusion of the lower jaw which I overcame by bridging from the right first molar to the left first molar on the upper jaw, jumping the bite with the bridge, and I sincerely regret that owing to patient's removal from the city I was unable to procure models of the case after the bridge was in place.

Of heredity there are a number of interesting syphilitic cases on record.

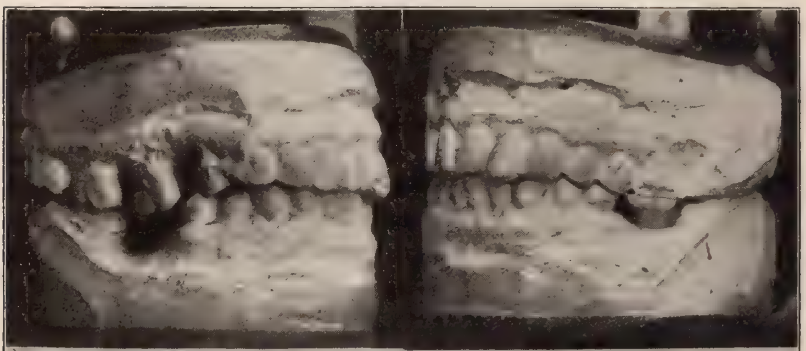
Thumb sucking during infancy causes the superior maxillary bones to be pushed forward until they acquire a V-shape thereby producing a marked protrusion of the upper jaw and teeth. The buccal cusps of the upper bicuspids drive the lower bicuspids lingually into the arch and allow the lower molars to move forward. These cases should be referred to the orthodontist for correction. Premature extraction of deciduous teeth allow contraction of the jaws so that upon the eruption of the second dentition these teeth are crowded out of the arches, producing a very marked malocclusion. These cases also should be referred to the orthodontist.

Excluding the causes already mentioned, I believe fully fifty per cent of malocclusion is due to the extraction of the first permanent molar after patients attain twelve years of age.

The first permanent molar is not only the keystone to the dental arches to keep them spread to their normal size but it is also the set screw to the human articular, being the largest and strongest of all the teeth, and of necessity capable of standing the brunt of masticating pressure. They are also the first of the human mill-stones to grind the harder and less easily masticated food between which it is ground into smaller particles before being passed back to the second and third molars where it receives its final mastication before being formed into a bolus by the tongue and thence being passed on down to the stomach—hence we have here a very strong argument in favor of the retention of the first permanent molar when possible.

My attention was first seriously called to this subject by Dr. Hinkins several years ago, when he read before this society an interesting paper on "The First Permanent Molar," and exhibited some eight or ten articulated models which demonstrated conclusively that in all of the cases the bite of the individuals had become shortened from the extraction of the first permanent molar. Now while none of this is new (nothing is but gold inlay casting machines) the massing of all these facts prepare us for more mature reflection and deduction which is the only excuse I have to offer for my paper this evening.

The effect of malocclusion from the extraction of the first molar in particular is as diversified as its cure is often (not always) simple. First we have facial deformity caused by the driving of the upper front teeth forward which in turn push the lips outward spoiling facial contour, and the upper front teeth becoming prominent, spaced and unsightly as will be noted in models "B." Second—By curtailing mastication as is shown in all models presented especially *A, B,* and *E,* and having produced to a very marked degree in the individuals of the models *A, B,* and *E* stomach trouble in the shape of indigestion from the lack of ability to masticate food. Third—Neuralgia of the most aggravated type by the incessant and painful hammering of gum tissue on the upper jaw by the cusps of the lower second molar as is demonstrated in model *C* and the gum tissue on the lower jaw



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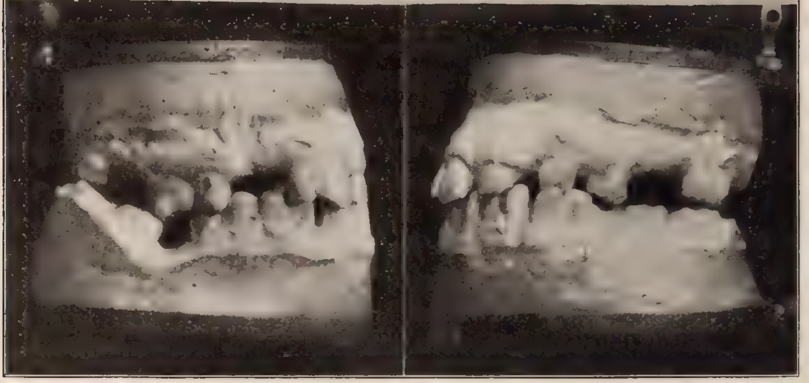

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as in model *D*, a condition unrecognized by the local operator for the individual of model *"D,"* in his home town in Dakota, from whence he came for treatment for neuralgia with Dr. C. Gurnee Fellows the oculist and aurist of this city, feeling that his neuralgia was due to some faulty condition of his eyes or ears. After a few treatments Dr. Fellows referred the case to me, advising that he thought the origin of the neuralgia was in the teeth. Upon careful examination I discovered the gum tissue of the lower jaw occluding with the upper right third molar, the cusps of which buried themselves into the tissue producing a periosteal inflammation, the pain alternating between the teeth on the right side and the right ear. I ground off the cusps of the third molar applying counter irritant to the gum forward of the third molar to reduce acute pericementitis which I found present, and the patient's neuralgia disappeared.

To the well known and demonstrated natural movement of teeth forward to fill the spaces made by extraction we have a group of diseases which may be classed as inflammatory and absorbative. As teeth move forward their distal cusps ride upon the cusps of the occluding teeth of the opposite jaw mechanically hammering them during mastication until an acute pericementitis is produced of the teeth back of space.

This condition if allowed to progress long enough may produce chronic pericementitis, periostitis, pericemental abscess and ultimately pyorrhea alveolaris. This last disease is well demonstrated in models *B*, *D* and *E*.

Models *B* show especially well the second and third molars on both right and left sides of lower jaw having moved forward almost entirely filling the spaces (caused by the extraction of the first molars) but wretchedly incapacitated for mastication owing to malocclusion with the upper molars and to their hopeless looseness from pyorrhea. The treatment and cure may be classed under three possible conditions—surgical, medicinal and mechanical.

Surgical treatment consists in the removal of all hopelessly loose teeth, the removal of all serumal calculus, and the amputation of extremely denuded and exostosed roots.

Medicinal, as in pyorrhea, the treatment of all pockets with escharotics, stimulants, and astringents.

Mechanical, the replacing of lost teeth with partial dentures, fixed or removable bridges. Where the span is not too long and the abutment teeth at either end are vital, I have had great pleasure and success in using gold inlays for abutment anchorages in bridging, rather than the old heroic extensive and less humane method of devitalizing, decapitating and crowning for abutments.

In closing I want to sound a note of warning regarding the assembling of inlay bridges—if contact points of abutment teeth are not tight against the teeth standing anteriorly and distally to them—ligate firmly just before taking the impression and bite preparatory to the final assembling of inlays and dummies.

TESTING CEMENTS.

BY J. O. KELLER, D. D. S., CHICAGO.

Powder and Liquid Test.—Take 40 grains each of powder of any cements to be tested. Mix each with its liquid, to a flow consistency suitable for crowns and bridges. Make each the same thickness as nearly as possible. Allow to set, then weigh. The powder which takes up least liquid, that is, the pellet which weighs the least, will be the best cement, because of increased strength and least tendency to dissolve. The higher the fusion of the powder the lesser the liquid, and the better the cement. The hardest and most condensed particles of calcined zinc oxide are obtained by long continued, high heat ten days in furnace at 2,800° F., the melting point of cast iron. Long continued high heat calcination results in physical conditions, which cause zinc oxide particles to chemically unite with decreased liquid percentages.

In making these tests it is assumed that a good cement liquid, with its phosphates, phosphoric acid and water in chemical equivalent proportions, is used.

Liquid Test.—Cement liquids are slow, quick and medium setting. Phosphoric acid and water are their basic constituents. Soda or aluminum phosphate may be incorporated by chemical reaction to neutralize and make them set properly. Other phosphates may be used, but soda and aluminum are most successful. Aluminum makes best neutralizer because it gives more stickiness and makes cement less soluble than any other. Large percentages make medium setting liquid. Labels on bottles should give formula percentages, so that the dentist can know the physical and chemical properties.

Trial Mixes.—Make one each, thick and thin flow, to determine and note setting properties. Setting time should not be less than ten, nor more than fifty minutes.

Erroneous Ink Test.—The ink test has been extensively used to determine the quality, superiority and porosity of dental cements. It is made by placing cement pellets in any color of ink, or in an alcohol solution of red analine.

All oxyphosphate cements are porous or become porous a few months after mixture of powder and liquid; hence it is error to condemn a cement because it is an absorber of test liquids soon after mixing.

Causes of Porosity.—Cement masses made with high fusion powder particles are most porous during the initial setting (24 to 48 hours) because the particles are full of minute holes, caverns, or small open spaces, as shown under the lens of the high power microscope. These inter-molecular spaces take up the test fluid by the great force of capillary attraction, and cement masses, made with the highest grade, highest fusion and hardest grit powder particles possible to calcine, will absorb the test fluid through most of their structure. Cement masses made with low fusion powders, at first are less porous than high fusion cements, because the former are very fine, small, molecular-like and fit so closely together that there is not sufficient capillary space and force during the initial setting (24 to 48 hours) to take up the test liquid or salivary secretions, so extensively, if at all; but after a few weeks or months the low fusion cement will have passed through a complete crystallization process. Its whole structure becomes crystalline, with capillary porosity, full of inter-crystal spaces, and it becomes an outrageous absorber of ink test liquids or the salivary secretions, much more so than high fusion cements. Such cements undergo extensive bulk changes, lack strength, and are most liable to wash out.

"Sets Under Moisture" Cements.—"It sets under moisture," is a phrase much used in reference to oxyphosphate cements, as to setting in water, or in the salivary secretions. Hydraulic cement is another phrase, which is erroneously used to indicate that the cement will set under moisture, because all oxyphosphate cements are hydraulic, whether they set under water or not. Water is a necessary component of their liquids. Water is not only necessary to hold the phosphoric acid and phosphates of the cement liquid in dilution and suspension, but to carry them into contact with zinc oxide molecules, so that crystallogenic attraction and chemical union can take place, therefore all oxyphosphate cements are hydraulic.

"Sets Under Moisture," is a "specious" advertising phrase. It is used to indicate that certain cements will set better under moisture and saliva. These claims are made in face of the scientific truth, that no phosphate in aqueous solution, will crystallize as well in water as out of it.

Experiments with oxyphosphate cements during their setting processes, show that they all absorb moisture, some much and others less.

PROCEEDINGS OF SOCIETIES.

THE CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting of the Chicago-Odontographic Society was held at the Chicago Public Library building, Chicago, on Tuesday evening, December 17, 1907.

The president of the society, Dr. F. E. Roach, occupied the Chair.

Dr. J. E. Hinkins read a paper on "Abnormally Acid Saliva."

DISCUSSION.

Dr. George W. Cook:

There is a fable which illustrates the way in which science and scientific thought have to pass through many bewildering and uncompromising paths. This fable relates that in Thebes it had been promised that the man who would solve the riddle of the cause of the plague in that city should be given the entire city. A man volunteered to do so, and in addition, gave this advice for the prevention of such a calamity in the future: That each person who held a torch of knowledge should go abroad and light another man's torch, this man to light a third torch, and so on, until the light of knowledge should be so universal that the most simple-minded individual in the kingdom might recognize the first approach of the plague, and take the necessary steps for prevention. This fable was penned centuries before the beginning of modern civilization, but today, although the torch of knowledge has thrown abroad the light of prevention and provided proper safeguards, we still have the riddle to solve as this knowledge is not put into practice.

Tonight we have an illustration of how the torch of knowledge is first lighted. The paper we have just listened to, logically and graphically explains how the investigator must traverse a winding path before he is able to illuminate the profound subject of scientific research. If this paper brought to a final issue some mechanical problem in dentistry, the writer would have been banqueted and loudly applauded for his achievement, but a mere glance at the paper shows plainly enough that this work is not for the present generation but for the benefit of those who are to solve some of the real problems that await the man of science.

This work as presented has touched upon so many fundamental problems pertaining to the physiological and pathological phenomena of the oral cavity that we are scarcely able to touch upon a single point without revealing the fact that there are many other points that should be worked out first clearly, in order that the many questions arising may be explained satisfactorily to those who seek to understand the points discussed herein.

My relations with the workers upon this problem have been of such a nature that I am enabled to appreciate the great difficulty under which they have labored in obtaining these facts. I fully appreciate the privileges accorded to me by these two gentlemen while they have been working on this problem.

The oral cavity has furnished many interesting phases of physiology and pathology to be worked out on purely scientific grounds. Since the discovery of parasitic forms in the oral cavity, there has been much speculation and research work tending to ascertain just what function these micro-organisms may have in the oral cavity. It was pretty clearly established many years ago that micro-organisms, or the so-called bacterial forms of these micro-organisms, brought about certain fermentative processes which produced disintegration of tooth substance and the characteristic phenomena of dental caries. On the other hand, we have been taught by the best physiologists that the saliva coming from the salivary glands is either alkaline or practically neutral in its chemical reaction. So with these facts before us, we have been convinced that all the acids that are present in the oral cavity were the result of fermentation. But this present investigation demonstrates beyond a question of a doubt that the glands secrete and pour into the mouth almost daily, in certain individuals at least, a saliva that is acid in reaction.

In reviewing the literature on oral pathology and the pathological changes that take place in tooth substance some thinkers have revealed the fact that they were of the opinion that certain of these lesions were caused by an acid, probably not the bacterial fermentation acid, but an acid which was the result of a mucoid degeneration of the mucous epithelial glands situated in various mucoid epithelial structure in a particular locality in the oral cavity, and there, by its constant contact with tooth substance, produced many of the lesions which we attribute to erosion. In purely local erosion, I am still of the opinion that the mucoid degeneration of the tissue in that locality is the true exciting cause of the erosion; but general erosion, I think the authors of this work have clearly revealed, is the result of the general acidity of the salivary secretions. Investigation may possibly show, however, many obstacles to this belief.

For the last eight or ten years it has been my privilege as well as my pleasure, to study in detail by microscopic observation and by artificial cultivation, all of the known forms of bacteria that grow on artificial culture media in the oral cavity, and from time to time I have been convinced that the micro-organisms of the human mouth could not act upon carbo-hydrate substance and produce all of the pathological phenomena direct as observed on the tooth substance. In studying the tissues around the teeth and the contents of the interproximal space, I have become confident that bacterial fermentation could not produce all of these lesions that we so often find upon tooth substance. I do not wish to be understood as saying that the typical forms of dental caries are not the result of bacterial fermentation, for these studies have revealed to me that in such places in the teeth where carbo-hydrate substance with their bacterial contents will produce the typical and well-defined caries, on the other hand, such forms as erosion that we find localized on tooth substance are the result of a slower and a more constant action of some form of acid that it would be practically impossible to designate as bacterial action.

The work that has been presented here, I think, helps to solve some of the problems in regard to physiological changes, with reference to the action of saliva on carbo-hydrate digestion, as well perhaps as certain forms of immunity with reference to the typical forms of dental caries; for I think if we will observe we will see that in cases of general erosion, a carious condition of the teeth is almost if not quite absent, and the reasons may be easily understood when we remember that bacterial fermentation cannot be produced in a media in which the bacteria through their own action do not produce the acid reaction in which they live. If the bacteria of decayed teeth are transferred to the filtered saliva in which we have this general acid condition, and remain there for any great length of time, to an extent they lose the power of breaking up carbohydrates and cause the formation of certain of the acids in media that are purely the acid of bacterial fermentation.

In the removal of the saliva from the ducts as mentioned in the paper, we find that these salivary secretions act very differently on the growth of bacteria in different individuals. The discussion of that phase of the problem cannot be taken up at this time, but there is one point that I have observed in connection with this work, and that is that the people who suffer from overwork or nervous strain produce bacterial growths that have equal, if not greater, power of acting upon tissues when inoculated into living animals, than they do in producing bacterial fermentation processes. On the other hand, the bacteria taken from the oral cavity of individuals who suffer from intestinal or other digestive disorders, will produce dental caries much more readily than the forms previously spoken of.

Some years ago I investigated and published the results of my investigation to the effect that different culture medias, artificial and otherwise-prepared media, such as blood and saliva, produced from certain individuals morphological changes in the bacterial cell to the extent that we could scarcely recognize them as being the same organisms with which we started out. This revealed the further fact that if the morphological changes could be produced by different media, it was also possible to produce certain physiological activities of the bacteria which might change their power of producing certain fermentative processes whereby the acid fermentation might be changed from an acid to some other enzymotic substance. These phenomena brought to mind the possibility of certain forms of these bacteria embedding themselves in the mucous follicles and there establishing certain tissue activities by which a mucoid degeneration of an acid character would be brought about and in this way produce certain eroded conditions. I am not sure that this is not true at this time. However, since those investigations, I have produced mechanically and chemically, certain tissue changes in this mucoid process whereby the acid condition would produce, according to the staining processes of Mann, an acid condition of the tissue itself. These investigations further demonstrate the possibility of saying, hypothetically, that the acids might be thrown off from the salivary glands in the same way as heretofore stated.

As I have previously said, this paper seems to me to establish some more definite and well-founded facts in regard to tissue changes in what might be considered purely physiological processes. It offers more and very definite data upon certain functions of the oral cavity that have not been touched upon by anyone heretofore; and I think the profession of dentistry will discover that these investigations brought out at this time as pure science, have opened up an avenue for future investigation for many generations to come.

The workers in this field have demonstrated some facts; they are facts that cannot be converted into tooth-powders or mouth washes, or various mechanical appliances to be sold to the profession, but they are truly and in a real sense, scientific facts. I want to thank the essayist and his co-worker for the privileges that they have accorded me, and for the co-operation they have given me in some of the problems I have tried to elucidate. My acquaintance and association with Dr. Acree, who is a chemical investigator of world-wide reputation, has been one of the privileges of my life. So much thought expended, and so much investigation of a problem that is purely a question concerning certain lesions of the mouth, shows the broadmindedness and the true and characteristic sympathy of one who investigates for the love of science. He has taken many hours from his regular field of investigation to devote his time to these problems of the dental profession, and the profession should show its gratitude by becoming more deeply interested in them.

J. Newton Roe:

Science and the professions of dentistry and medicine should appreciate the labors of these two gentlemen in giving to us the benefit of their observations upon the composition, acidity and activity of the saliva of five different patients of Dr. Hinkins.

My attention was first directed to the technique of the method of the chemical examination of the saliva in question. The well-known reagents with necessary precautions have been used in most of the processes. The use of phenolphthalein as an indicator is good, except where ammonia or bicarbonates are present it is never suitable. But everything considered it is perhaps the best indicator to us.

The caption of the article is somewhat misleading as it may imply that normal saliva is either neutral or alkaline, whereas, it has been conceded for some time that saliva is usually neutral or slightly acid. If the term abnormal is used to signify excessive acidity of the saliva of the particular cases in question its use may be appropriate in this restricted sense only. It requires 2 c.c. of normal alkali solution to neutralize 10 c.c. of mixed human saliva, and this, notwithstanding the fact that such saliva reacts as alkaline toward litmus, lacmoid, or rosolic acid.

Consideration must also be taken of the fact that saliva from the parotid gland is always more acid in reaction than the saliva from the other salivary glands, and also, that the submaxillary gland alone normally secretes approximately three times as much saliva as the parotid gland, which would be a potent factor in lowering the acidity of the mixed saliva over the higher acidity of parotid saliva.

The experimenters seem to establish a connection between the acidity of saliva and the cause of teeth erosion, but this is subordinate to the establishment of the fact that the acid character of saliva is due to some physiological process, enzymotic or otherwise, in the salivary glands, and that the alkalinity, either real or apparent, may be due to subsequent enzymotic or chemical action after the saliva is poured into the mouth.

It should be constantly borne in mind that acidity in any saliva is most likely due to the presence of acid salts such as calcium bicarbonate, calcium hydrogen, phosphate, and sodium dihydrogen phosphate, and not to much quantity of free acids. Doubtless the chief cause of salivary calculus is due to the precipitation of calcium carbonate from the bicarbonate contained in the saliva. Much free acid present in saliva would have a tendency to decompose the bicarbonates.

It should also be known that saliva ceases to be actively enzymotic when more than a slight excess of free acid is present. From this fact it may be believed that not much, if any, of the acidity in the acid saliva of these investigators is due to the presence of free acid. It may, however, be true that the slight excess of acidity of parotid saliva over submaxillary saliva may be in part due to free acid in the parotid secretion. It is known that submaxillary saliva is much more enzymotic than the parotid secretion, and the more favorable condition for the action of myalase or ptyalin may account for this increased activity.

The acidity of the mixed saliva would not be diminished by its admixture with the secretion of the mucous glands, for the latter is nearly always acid in reaction. Chemical changes may occur in saliva after its flow into the mouth, which might lessen its acidity. For example, any free carbonic would readily decompose and leave as carbon dioxide.

The experimenters have stated that saliva upon standing does not increase in acidity as might be expected if any bacterial agency produced the acidity. This is offered as evidence that the acidity of saliva is not produced by fermentation in the mouth where bacteria flourish. Just at this point we are to be careful about arriving at conclusions too hastily. We no longer recognize much difference between fermentation by zymes and enzymes, and we also are of the opinion that the same enzyme may under certain conditions hasten the decomposition of substance into products, and then, in turn, hasten the reformation of the products into the original substance. For example, maltose has the property of hastening the change of maltose solution into the monosaccharide, dextrose, and also the property of changing dextrose solution to the disaccharide, maltose. In other words, the reactions of enzymes are reversible, and why may we not expect reversible reactions among zymous or bacterial action? Fermentation, in many well-known instances, will continue until a certain quantity of a given product is produced, when all further action ceases until the percentage of the ferment product is lessened. Grape juice, although rich in fruit sugar, will ferment under the influence of zymose from yeast until twenty per cent of alcohol is produced, and any excess of sugar will remain in such fermented wine unchanged. In other words, the presence of the product of fermentation after a certain per cent is reached will render the catalizing agent inactive. If the ferment products were removed or were changed chemically into some other form, fermentation would continue until within reasonable limits all of a fermentable substance would be decomposed. The percentage of ferment products that inhibit enzymous action in some instances is very low. For example, lactic, which is formed from maltose by the action of the Bacterium lactis, requires the presence of a basic compound, such as lime, to combine with the acid as rapidly as produced, so that the excess of acid will not inhibit the action of the zyme. The acid thus produced is obtained combined as calcium lactate, which upon a manufacturing scale is freed by means of sulphuric acid. Lactic acid is without doubt formed in the mouth first by the action of myalase upon the starch producing maltose, and then by the further action of the lactic acid zyme into lactic acid. The lactic acid thus produced could not for reasons stated above accumulate in the saliva as its inhibiting influence upon the zyme would prevent further decomposition of the maltose. As no bacteria were found in some of the parotid salivas of these investigators, the acidity must have been produced by the action of an enzyme in the gland upon a blood product forming a free acid, or what is more likely, through the gland activity some acid salts are formed from the alkaline salts of the blood.

The investigators have certainly done their work with great care, and the scientific spirit manifested by them is such that will achieve good results.

Dr. H. N. Lancaster:

There are a few questions which I would like to have answered. In the first place, I would like to inquire about temperament in connection with these investigations. I would be much interested in knowing to what extent observation has been made in connection with temperament in regard to the subject of erosion, as showing the vulnerability of one temperament compared with another, or modifications of temperament, and also immunity of one temperament compared with another in regard to this particular phenomenon of erosion; also the comparative degrees of acidity in the different temperaments in a practically normal physiological condition, that is, apart from any disease; and also, if in certain temperaments it has been found that the acidity is of a more organic or inorganic nature, and vice versa.

I would also like to inquire if secretions other than saliva and mucous, viz., of the skin, have been investigated in a similar way as the oral fluids, and according to different temperaments.

Dr. Arthur D. Black:

I do not wish to discuss the paper, but I wish to ask Professor Acree concerning a statement that he made which is contrary to the general belief of the dental profession.

He stated, if I understood him correctly, that a change of foods which would decrease the elimination of acids would have certain effects upon the bones in changing the formation of the bones, and also that the carrying away of acids would make certain changes which he stated would make the bones very fragile or soft. I understood him to say that similar changes take place in the teeth.

In the dental profession it is thought that such changes do not occur in the teeth after they are once formed; that is to say, no matter what the subsequent condition of the body is, the tooth structure does not change either for better or for worse.

Extensive experiments have been carried on in this country and in Europe which have demonstrated quite conclusively that there is practically no difference in the quantity of lime salts in the teeth of different individuals under all conditions; that in the examination of hundreds of teeth from the mouths of persons of all ages and bodily conditions, the greatest variations in the quantity of lime salts was about four per cent, not enough to be of importance. (An Investigation of the Physical Characters of the Human Teeth, etc., by Dr. G. V. Black, *Cosmos,* 1895, p. 353.)

The fact that there is no circulation in the enamel or dentine makes it seem to me to be impossible for changes to take place in these structures similar to those that take place in bone. I do not see, therefore, how we can have any pathological conditions of the enamel or dentine as a direct result of changes in the circulating fluids of the body. Changes of these structures resulting from acidosis must, it seems to me, be brought about as a result of modified excretions.

I am sure it would be interesting to know exactly what work has been done in examinations of the structures of the teeth in connection with the subject under discussion.

Prof. S. F. Acree:

In the case of rabbits in which they brought about artificial acids, they stated that both the teeth and bones were dissolved away. They got at that first by showing that the phosphates actually got into the urine, and then taking the animals and feeding them phosphates, they would try to make up the lost phosphates in the urine and then would not have the wearing away of the bones.

You understand that this work has been done largely by Drs. Barker and Bucklin. They state as their opinion that the blood going through the bones actually does dissolve out the calcium phosphate, and it is my understanding that they believe that similar changes take place in the teeth, although the experiments with the teeth have not been extensive.

That would be a very interesting study. We ought to have that worked out on human beings. It is a matter I have suggested at Johns Hopkins, and I have no doubt they will take it up. They would like to take up the study of the saliva, but they are not as much interested in that as you are.

There are a great many matters connected with this subject, and one gentleman has asked a question regarding the temperament of the individual. It was found by one experimenter that acids are more likely to occur in individuals who are at all nervous. Dr. Hinkins has also found this to be true in his dental work. Drs. Barker and Bucklin paid special attention to this point, and they found nervous individuals are very much more likely to have acids in the system, or to put it the other way, individuals who have acids in their systems are generally nervous.

Dr. Hinkins in closing the discussion, said:

Mr. President and Members: I am very much obliged to you for your discussion of the paper, but I am sorry that we do not hear more regarding the dental aspect of the subject. I have been very much gratified with the discussion from a chemical standpoint. This subject is one of very great importance to us all as dentists. I can see every day the relation of chemistry to scientific investigation by the dental profession for the elevation of dentistry. It does not make any difference what subject we take up in dentistry, let it be the saliva, or bacteria, or what not,.chemistry is a very important adjunct.

Dr. Black and Dr. Miller have worked on this subject for years, but they have never told us what kind of bacteria produce certain acids and alkalies. This has been left for the chemist. When we get into the field of microscopy and chemistry, we must admit that if we would only go back a little and look over the human race for the last twenty or twenty-five years and notice the environments today as compared with those of thirty-five years ago, we shall find that they are just as different as the environment of bacteria. Think of the forests that existed a few years ago; and now look at the railroads, telephones, and the thousands of tons of smoke that go into the atmosphere each day, and take into consideration the cold storage of food products; to say nothing of the tuberculosis in the milk, is it any wonder that our teeth decay? If the environment cuts any figure with other things, then certainly it cuts a figure with the human race, and we cannot expect the same results that we had thirty-five or forty years ago.

In this paper, we have not tried to demonstrate any certain effect. We have given you the results in the paper that we have been able to find and have worked for the interest of the profession for years. These cases that I have reported tonight have been under my observation for about nine years, and I will say frankly that the worst cases of erosion that I have seen are found in people with highly nervous temperaments.

I have paid absolutely no attention to the evaporation of the skin. In some few cases I have paid some attention to the acidity of the urine, the acidity of the urine ran parallel to the acidity of the saliva. I will cite three cases in particular that I have at the present time. One of them is a man of highly nervous temperament, and he has one of the worst cases of erosion that I have ever seen. He is the president of a large corporation. Another patient is the wife of the traffic manager of a railroad, a very nervous lady, and she has almost or equally as bad a case of erosion, and you saw the per cent of acidity in my own mouth. I think that over fifty per cent of my practice is erosion cases. When I come to look over them carefully, I find that erosion is almost entirely confined to people of responsible and nervous positions. I have a good many board of trade people that have erosion, and I have found very few cases of erosion in people who are not under a nervous strain.

Now, then, regarding the catheterization of Steno's duct, I have observed for a good while that the secretion from Steno's duct was acid. When I would see its contents poured out, my first object was to test it for acidity and I found it was acid. Then the question came up as to the degree of acidity. It is impossible, I think, for a man to tell the degree of acidity that is found by the litmus test. After associating with Dr. Acree, we took to catheterizing this duct and then getting the percentage of acidity by titration. I have found that the worse the case of erosion the greater the acidity.

These observations which I have presented to you tonight have been carefully tabulated during the past eight years, and are presented to you for your consideration.

I thank you for your attention.

JANUARY MEETING.

A regular meeting of the Chicago-Odontographic Society was held January 21, 1908, with the president, Dr. F. E. Roach, in the chair.

Dr. C. P. Pruyn read a paper entitled "Surgical Treatment of Alveolar Abscess."

DISCUSSION.

Dr. John S. Marshall, U. S. Army Corps, California, was invited to open the discussion. Dr. Marshall said:

Mr. President and Members of the Society:—It gives me a great deal of pleasure tonight to be here and to look into your faces again. As your president has informed you, I have been absent for some years—not idle, however, but busy, in trying to hold up the dignity of the profession. My position has been a somewhat peculiar one—an unique one, I may say—one that no other man up to this time has ever occupied. I have been placed, as it were, in the limelight where I could be criticized and have been criticized sometimes most unmercifully, but criticism hurts no man if he takes it in the right spirit, and I have tried to take the criticism which has come to me in that spirit. It has not made me sour, because some people rip me up the back; I am as happy as I ever was, and keep on in the same old way trying to do my duty, as I understand it. I could not expect to please everybody, and I never try to please everybody. I have tried to do my duty as I have understood it, always keeping in mind the best intertsts of army dental surgery and the honor of our profession.

I miss from this audience a good many old and familiar faces, and I see a good many faces for the first time. But I am glad to call you all brothers and sisters in the profession. I take it, you are all in the profession, or you would not be here tonight.

I feel honored that I am a member of this society. When I left Chicago for my new work, I determined that I would keep up my affiliation with the city society, with the state society, and with the national society, no matter whether I was able to attend the meetings or not. I want to say this to the young men: You cannot hope to accomplish much without attending dental societies. What I have been able to accomplish in the world has largely come through what I have learned in dental societies. I was always present. I never missed a meeting unless I was ill, and I never attended a society meeting that I did not go away feeling I had learned something, and I think that will be your experience, if you follow it out through your professional life.

I have been pleased very much with the paper that our friend, Dr. Pruyn, has read. He has put the subject in a fair and scientific light. I have nothing whatever to criticize in his methods of treatment, with the exception, perhaps, I might differ with him as to the question of the amputation of the roots of teeth *in situ.* I had some experience in treating persistent dento-alveolar abscesses when I was here in Chicago, and perhaps some of you will remember that about twenty years ago I read a paper entitled "A Plea for the Extraction and Replanting of Teeth Which Had Persistent Dento-Alveolar Abscesses." I had tried the method several times which has been outlined by the essayist, namely, that of amputating the root in its position, and I did not get very good success. In fact, I had very poor success, and I made up my mind I would try another plan, and so I extracted those teeth. I am now speaking of single-rooted anterior teeth, not molars. I amputate palatal roots frequently—the roots of molars that have become uncovered from pyorrhea alveolaris. That is, of course, amputation *in situ;* but in single-rooted teeth, those that are affected by disease, I had no success in amputating them *in sutu.* So I adopted the plan of extracting those teeth. I put them in an antiseptic solution at a temperature of 105°, let them soak there for a little while, wrapped them in a piece of gauze saturated with the same solution, drilled into the crowns of the teeth, to gain access to the pulp canal, thoroughly drilled and reamed it out, passed the drill through the apical foramina, washing the canal out thoroughly with antiseptic solution, placed them again in the solution, allowed them to stay for fifteen minutes in 1-1,000 bichloride, removed the teeth from the solution, and amputated the diseased ends with the saw in the dental hand-piece, and with a stone I carefully ground them smooth, taking off all the sharp edges. I enlarged the apical foramen. All of course done under antiseptic precautions. First, however, I filled the root with gutta percha solution, forcing it up so that it came through the foramen. As soon as it had opportunity to set a little bit, I cut off the surplus of the gutta percha from the end of the root, enlarged the apical foramen, and plugged it with gold. I reversed the process and plugged the other end with gold in the crown; then put it back into the solution, and allowed it to stay there while I prepared the cavity from which it had been extracted. I washed this out carefully and with a bur passed through the alveolus tore up the sac, and washed the cavity out again with 1-1000 solution of bichloride. I should have said beforehand that I always take an impression of the case before extracting a tooth. I constructed a little splint generally of gold, which would cover this tooth and the one on each side of it. After the abscessed cavity has been washed out, thoroughly curetted, and again washed out, the tooth is put back into its position, the splint put on, and cemented there with oxyphosphate cement.

Before I left Chicago I had a record of fifty of these cases, and up to the time I left I never had one suppurate again, or never had to extract one of those teeth. Some of you may have come across some of these cases, and may have had to extract the teeth. If you have, I would like to know it. But I have never had one of them come back to me.

I attempted to do this at one time in the case of a lady who came to me with a marked case of pyorrhea alveolaris. One tooth was very loose. It had a large pus pocket on the palatal side, and I thought I would try the scheme in her case of extracting the tooth and scraping the root thoroughly and then replant it. My idea was that I could more readily get all the concretions off the root if I held the tooth in my hand where I could see them, and so I extracted the tooth and treated it in that way. I returned the tooth in place, splinted it in position, and that splint was worn for a year. When I removed the splint the tooth was found to be solid. Some three months later she told me that in biting a hard apple she hurt this tooth, and in three weeks' time it sloughed out. I never had that happen to teeth which I treated for persistent dento-alveolar abscess. I state this because Dr. Pruyn did not mention this method, and some of you undoubtedly have not read the paper that I have previously referred to. But it is the better way in my judgment to treat the persistent cases of dento-alveolar abscess. I am not speaking of the ordinary cases of abscess, but of those in which you have failed time and time again to treat successfully by other methods, perhaps the treatments extending over a period of two or three months, without making any progress in the case. Those are the cases that used to discourage me but now I treat them in the manner I have described and with the greatest success.

Dr. Truman W. Brophy:

The paper of Dr. Pruyn is a very important one, because it deals with a class of diseases which are as prevalent as any we have to deal with.

Like the gentleman who has just preceded me, I have no criticism to make regarding the treatment the essayist has recommended; but I would like to say a few words not only with regard to the nomenclature of the subject, but with reference to the diagnosis.

I was very glad to hear the last speaker make use of a term which, it seems to me, ought always to be employed in referring to these abscesses. It has grown to be too much of a habit with members of the dental profession to speak of alveolar abscesses. Among ourselves, it is clearly understood as to what we mean; but let this expression be employed among men who are not engaged in dentistry, and they would be at a loss to know, unless they know the speaker is a dentist, as to what kind of an alveolar abscess he means. We have alveoli of the lungs, of the kidneys and liver. A physician might say, What alveoli are you talking about? But when we say dento-alveolar abscess, we locate the disease, state where it is, and the expression covers the question we are considering.

Another expression that has been employed, and too frequently, which was brought out very clearly at the recent meeting of the Institute of Dental Pedagogics, held at New Orleans, in discussing the subject of dental nomenclature, namely, the term peridental membrane. Let me say, in passing, there is a commission of that institute on Nomenclature. It has prepared and done some work on the subject of prosthetic dentistry, perhaps the most complete that has ever appeared, and, at the meeting, held in New Orleans about two weeks ago, a report was made on the nomenclature of operative dentistry, the most perfect that has ever been prepared for our profession, and some of the expressions used here this evening were considered. There was no difference of opinion among those present as to the propriety in using certain expressions, and there was no difference in opinion as to the impropriety of using other expressions. The essayist of this evening has seen fit to make use of an expression which is so frequently employed, that I am not surprised he used it, namely, the term peridental membrane. There is no such membrane.

There never was such a membrane, and the only membrane that is ever so regarded is the dental follicle which exists in embryo. If it is right to say peridental membrane, it would be right to say peridentalitis. The inflammation which attacks the membrane surrounding the root of a tooth is pericementitis. We ought to have this as nearly correct as we can. I think we should abandon in our dental literature the expression peridental membrane. There is no such membrane. If it were a peridental membrane, it would surround the whole tooth, but it surrounds only the cementum.

I think one of the most important parts of this paper is the diagnosis. When we arrive at a conclusion as to what is the matter, or when we know what is the matter, then it is not a difficult thing to address to the parts appropriate treatment. In fact, it is always most difficult in the field of surgery or of medicine to find out what is the matter, to know exactly the condition that exists. After knowing this, you can make use of the remedies that are required to bring about the process of repair.

The essayist did not have time to enter into a discussion of all the details of dento-alveolar abscess, but he has given us typical cases, those which we meet with frequently, and which we treat exactly as we treat them, and what he has said that applies to the class of cases he has mentioned would likewise apply to the cases seen everywhere. In certain cases of molar teeth, and of the lower maxillary bone, where an abscess may be deep-seated, it is not so easy to resort to amputation of the roots with a feeling of certainty without causing considerable disturbance to the surrounding parts.

The manner of opening into these abscessed cavities and draining them and excising the ends of the roots of teeth, as described by the essayist, has been done for many, many years, or the method he recommends has been employed for many years. Within the last few years I have modified my methods of operating on these cases considerably. Formerly, I made an incision reaching to the bone, dissecting back the periosteum, opening into the cavity, curetting it out, cutting off the root, and packing it with a view of forcing the parts away so that granulations might form and fill the cavity and thus bring about repair. More recently I have adopted a different plan which I know will serve my purpose better. Instead of holding away the overlying gums and overlying periosteum over the bone, I make a funnel-shaped opening, taking away this tissue and leaving a saucer-shaped cavity, and there is no packing required. Granulations will form, the cavity will fill, and repair will follow without any depression in the part. The granulation will form and fill it up, and the patient will recover with less inconvenience to himself and with less trouble to the dentist than where he cleanses and tries to irrigate the cavity through a small opening such as we have generally employed.

I want to recommend as a means of making the diagnosis in some of these cases that are difficult to reach, the value of the Roentgen ray. It seems to me, we as dentists could not get along very well now without the use of the X-ray in determining the extent of diseased tissue or of caries. Whether the disease has involved other parts may be determined by the use of the X-ray. It is a most valuable means of diagnosis. We often find conditions in which we are unable to determine the source of the irritation. Only yesterday I found in between two molar teeth a supernumerary tooth of the form of a deciduous cuspid. It was wedged in between the first and second molars. It had displaced them, and had become the center of infection. This was causing the difficulty, and I was unable to determine what caused the disturbance before using the X-ray, as were three or four other men who had previously treated the patient. One of them brought the case to me as he could not tell what was the matter. The X-ray explained to us satisfactorily what caused the disturbance. We opened into and removed the supernumerary tooth; the parts were curetted a little, and the patient will undoubtedly get well. There is no means at our command by which we could have settled that question were it not for the use of the X-ray.

Dr. C. E. Bentley:

This subject is susceptible of very little further discussion, for the reason that it has been treated so comprehensively by the gentlemen who have preceded me. It is, however, as presented by the essayist, very suggestive to me in a great many ways.

First of all, it occurred to me that during his exposé of the history of the subject, how easy it is for a habit, good or bad, to become engrafted upon a profession, and how hard it is to shake off that practice. The essayist tells us that this form of practice, of boring in at the gum line for the escape of the mephitic gases in the pulp chamber clung to the profession for twenty-five years. How easy it is for a bad practice to become engrafted upon the consciousness of a group of people and for them to adopt it.

A Catholic pope hundreds of years ago said that all priests of the Catholic church should be celebates, and that became his manifesto; from that day to this all Catholic priests are supposed to be celebates. At one time all people believed that the world was flat, a man with scientific instruments and with scientific bent of mind proved to the world that the earth was round, and he was burned for his thought. In the olden days, when men hunted with hounds and horses, buttons were placed on the skirts of their coats in order to keep them out of the way in the rush for the fox, and ever since then men have been wearing buttons on the backs of their coats. These things have clung to us by the tyranny of fashion or force of thought. And so it is in the dental profession. For twenty-five years or more there was the practice of boring in at the gum line to allow the escape of mephitic gases, this practice having been engrafted on the profession, and it took twenty-five years and some laceration of conscience and of method to shake it off. The essayist has said in his paper, that some so-called dentists still practiced that method. And so when Dr. Marshall said to the young men to stick to the societies, to absorb all they can from this post-graduate school, to cling close to this professional contact, he said a splendid thing, for here and there and everywhere, where there are groups of professional men who are interested in the advancement of the profession, do we see the forerunners of thought to slough off these ill-advised notions and fashions and to bring truth into the foreground.

The truth about the treatment of chronic alveolar abscesses is here: We know now how to treat them. The subject of this paper is not susceptible of much argument. We have about arrived at the truth concerning it. You must agree with me when I say that there are few occasions now when we have to amputate the roots of teeth for chronic alveolar abscesses as compared with the number of chronic alveolar abscesses we are compelled to treat. Personally, I have had a few of these cases to attend, and I have not had so very much trouble, having followed the orthodox lines of treatment, and that has been very much as has been outlined by the essayist. It is not my purpose to criticize—indeed, it would be presumptuous in me to attempt to make any criticism of so able a man and an authority as Dr. Marshall; but as between the simple method, the comparatively simple method, of excising the end of a root and the method he described, I would prefer the former, and I would enter a protest against his method of treatment because I fear, in spite of his fifty cases that he has related to us and which must stand as competent evidence, there would be the possibility of infection. In spite of all the antiseptic precautions taken for the extraction of a root, and its subsequent bath in bichloride of mercury, 1-1000, and in spite of all the antiseptic precautions the gentleman has given us, there is still a chance for infection; for, if you remember, he said he used his stone in the engine to drill or smooth off the root, or he would use his saw, and then he would go up in this pus-laden tract and wash it out. Whether he washed it out with bichloride of mercury or what not, he nor any other living man cannot disinfect a pus sac in fifteen or twenty minutes with any sort of solution, and his stone may have had on it the erysipelas germ; it may have had on it some other germ that is in full bloom of proliferation, and the antiseptic bath of fifteen minutes is not sufficient to completely inhibit the growth or to completely obliterate all of the germs that may have been there, and the impaction of that tooth, without any provision for escape of mephitic gases, is liable to cause some dangerous infection of that pocket, something like erysipelas, and some other things more disastrous, and even if Dr. Marshall did have fifty cases, the fifty-first case may be or may have been the one.

Knowing that Dr. Marshall is familiar with the classics of antiseptic surgery, I cannot agree with him that his antiseptic surgery is pure antiseptic surgery in the light of our present knowledge when he says he can sterilize a pus tract in fifteen minutes with any sort of antiseptic solution. As between the method described by Dr. Marshall and the one described by Dr. Pruyn, I prefer the latter, for the reason that I think there is no such chance for infection.

I am indebted to Dr. Brophy for the new idea he has given to us in operating on this class of cases. It appears to me, that out of his large fund of experience this funnel-shaped incision is a most excellent one, both in the light of antiseptic surgery and of antiseptic architecture, for it minimizes loss of structure, and, at the same time, it gives to us a cleaner wound, so that it may heal by first intention or as nearly so as possible.

In closing, I want to say to Dr. Brophy, who has been so particular about the pronunciation of terms and the splitting of hairs about such expressions as pericementitis, peridental membrane, periostitis, etc., that he will find that the word nomenclature, as he calls it, is pronounced no*men*clature.

DR. BROPHY:

I will say to my friend, Dr. Bentley, that if he will look in the new Century Dictionary, he will find that my pronunciation of the word nomenclature is correct.

DR. ARTHUR D. BLACK:

I have had occasion during the past few months to review some two hundred articles in our dental journal literature on the subject of alveolar abscess, and there come to my mind one or two historical items that may be of interest in connection with this discussion.

The originator of the procedure of drilling vent-holes was Dr. S. P. Hullihen, of Wheeling, W. Va., about the year 1850. Dr. Hullihen performed the operation for the treatment of a tooth with a living pulp, the pulp having been exposed by caries. Previous to that time it was the general practice in the profession to extract teeth when the pulps were exposed by caries. Dr. Hullihen drilled a hole below the gingival line through the gum, through the alveolar process, through the root of the tooth into the pulp chamber, then removed the decay in the tooth and inserted a filling. His idea was (and he cited some cases to prove it) that the pulp would remain alive under such conditions; that the hyperemia caused by the closeness of the filling material would not strangle the pulp, because of the vent-hole he had drilled. These pulps must have died after a time. That was the original operation, and was followed later, as has been mentioned tonight, by the operation of drilling a vent-hole to relieve the pressure in the pulp chamber in cases of dead pulps.

There is reported a case in which Dr. Hudson, of Philadelphia, as early as 1830, removed the dead pulps from two upper central incisors and filled the root canals with gold. Those teeth, examined thirty years afterward, were found in good condition. Dr. Hudson was one of the pioneers in the dental profession; one of the original men of those days.

Dr. T. L. Buckingham, of Philadelphia, in the *Dental News Letter* of 1858, stated that in cases in which the ends of roots of teeth had been denuded of peridental membrane, the operation of extraction was necessary; showing that he made a differential diagnosis in these cases.

In 1869-70 there appeared a series of articles written by Dr. Homer Judd, of St. Louis, in the *Missouri Dental Journal,* in which he gave the symptoms, diagnosis and treatment of both the acute and chronic forms of alveolar abscess, and mentioned the operation of cutting off the ends of roots. These papers by Dr. Judd are classic, and I have not found better writings on this subject anywhere in our dental journal literature.

Let me say a word or two about nomenclature. The word, nomenclature, has two accents, the primary or greater accent on the third syllable, and the secondary or lesser on the first, as Dr. Brophy gave it. We had a discussion about this word a year ago, and I was one of a committee that went to the Crerar Library and looked up its pronunciation.

The term alveolar abscess should be applied as Dr. Pruyn has given it, that is, an abscess of dental origin, originating solely from the death of a pulp of a tooth. These abscesses should be distinguished clearly from those which originate along the sides of the root of a tooth. They may be considered of dental origin, but are not what we consider true alveolar abscess. These are referred to in the American System of Dentistry as "lateral" abscess.

Dr. Pruyn used the words "fistula" and "fistulous opening" in connection with the tract of a chronic abscess. I think fistula is not the best term to use in that connection. The word sinus is a better word for the reason that sinus in pathology means only one thing, while a fistula means two things, with the preference on the other thing. All dictionaries give the same definition of the word sinus, namely, a tract carrying pus from an abscess cavity. The word fistula has two meanings, one being practically synonomous with sinus, but the meaning that is given preference in many dictionaries is: an abnormal tract that carries a normal secretion from a normal cavity. Suppose we have a condition by which pus is discharging under the chin through a tract or canal; that is a sinus. But suppose, instead, we have an opening from the floor of the mouth through under the chin, a canal, and saliva is passing through this opening and discharging; we have a fistula. That is one of the normal secretions of the body discharging through an abnormal opening. In the same way we would have a urinary fistula if we had an opening from the bladder through the anterior abdominal wall and urine was escaping. If the bladder should become infected, and pus was discharging, the canal would be called a sinus.

In the treatment of acute cases of alveolar abscess, I wish to emphasize the desirability of making an early incision in order to avoid the stripping up the periosteum from the bone. The pus readily penetrates the bone around the apex of the root until it comes to the periosteum. Sometimes it will not readily get through the periosteum, but will strip the periosteum away from the bone, and if it remains in that condition very long, we may have necrosis of the bone as the result. For that reason, we should lance an acute abscess early, and we should be sure that the knife goes through the periosteum to the bone, scraping the bone with the end of the knife. If we do not get pus, the opening should be packed and kept open, so that any pus which forms may escape, and the patient will be relieved of pain much earlier.

In the treatment of cases of chronic alveolar abscess, to my mind the most important thing has been mentioned here before, namely, a diagnosis of the actual condition that presents, and I believe the largest percentage of failures in the treatment of these cases is due to the fact that an exact diagnosis is not made. The fact that we are able to make a diagnosis of chronic alveolar abscess, does not help us much with the treatment. We should learn the exact thing that has caused the chronic condition.

Dr. Pruyn has suggested the use of the steel probe for the examination, and I want to add in connection with that, as Dr. Gilmer has done in presenting that instrument to the dental profession, that it shall not only be a steel probe, but a sharp, stiff, steel probe, one that will not bend when you apply it against a hard substance. It should be sharp, so that we can determine by its penetration the condition of the tissue in which, or against which, we place it. Many men in the dental profession seem to be afraid to place a probe through the soft tissues; they are perfectly willing to drill into the root of a tooth, but the minute they go down below the free margin of the gum and go through the soft tissues to get at anything, it looks as if they are afraid. I cannot account for it in any other way. A sharp, stiff, steel probe is the best instrument with which to find out what the trouble is in these cases. It is a simple thing in a chronic abscess to pass a soft silver probe through the sinus first, in order to learn its direction, and locate, if possible, its source. With it, we get the direction of the sinus, and can then pass the sharp probe and follow the sinus more easily until it comes in contact with the end of the root, or bone, or whatever is causing the trouble. Our hope of success in the treatment of a case of chronic abscess depends very largely on the condition of the end of the root; that is, how much of the peridental membrane has been destroyed from the end of the root; how much of the end of the root has been denuded of the tissue which is normally attached to the end of that root. If much of it has been denuded, you may squirt medicine through the tract until dooms-day and you will not cure that chronic abscess. If it has been denuded for a great length of time, or if there are deposits of serumal calculus, or very much absorption of the end of the root, you will not cure that case by medication. It is a surgical case, and if you have any hope of curing it at all, it will be by resection or cutting off of the end of the root. I doubt if there are many cases in which we effect a permanent cure where we do that operation. If we get a permanent cure when we cut off the end of the root, the cementum must be built over and cover the dentine exposed by the operation. The surrounding tissues will not attach to the dentine. The only way we can get an absolute cure is by a deposit over the end of the root of cementum, to which the soft tissues will be attached. Injuries of dentine by absorption are often repaired by cementum, and this may or may not occur in cases of root resection. However, we can oftentimes, by resecting the end of a root, give a comfortable tooth that will last a good many years before it is necessary to extract it. As between that operation and the operation of extracting and cutting off the end and replacing the tooth, I should be in favor of cutting off the end of the root without extraction, because then, it seems to me, we have quite as good a chance for the cementum to build over the end of the root, and still have a normal attachment of the tissues around it.

In cases in which the lingual roots of upper molar teeth are to be amputated, practically all of the peridental membrane having been detached from the root, the root canal should be filled first, and my own practice in the few cases I have had, probably twenty or twenty-five, has been to fill the lingual canal with gold first, and then, when the root is cut off close up to the crown, there is a gold filling in that portion left exposed in the mouth, which, to my mind, makes a nicer operation than a gutta-percha filling.

Dr. William H. G. Logan:

There are some cases of dento-alveolar abscess that need surgical interference, not many probably. In the acute form of dento-alveolar abscess I think you had better keep the knife in the drawer and let the case alone, unless the temperature has gone so high that you are afraid of general infection. If the temperature goes beyond 102, and it is likely to go higher, I would go through the periosteum and make long incisions. If the temperature is below 102, I think it is best to let the abscess alone, for in seventy-two hours or in three days from the time it started it will have run its course. That kind of case is one that does not create much elevation of temperature. If the swelling is circumscribed, with the temperature of the patient 102 or below, I would treat it through the pulp chamber. In a chronic case as the result of disease of the attachment to the tooth, if I were to cut off the lingual root, I would not leave all the crown standing. If I were going to remove the lingual root or the mesial root of a lower molar or the distal root, I would remove a portion of the crown supported by that root. That is to say, in case of pyorrhea alveolaris occurring about the lingual root of an upper molar, I would not like to leave any condition that would allow deposits to be held in contact with the other roots. I would take a cross-cut or fissure bur and bore into the crown, or remove the lingual root, and cut from the mesial to the distal through the center of the tooth straight back, and when that portion was cut away, I would extract the lingual root; then on the two buccal roots I would place a long flat crown. If on a lower tooth, I would cut from the buccal to the lingual between the mesial and distal roots, and extract one. I consider that better practice than cutting off the end of the root. Especially is this true in diseases of the gum.

In reference to single-rooted teeth, where the alveolar plate is all destroyed on its anterior part, it is the best practice to cut it off, but where we cannot get at it very well, and there is no overlying alveolar plate but a small opening through it, I think many times it is best to extract the tooth, cut off the end of the root, and then place it back into position. But if I can cut it easily, and not destroy unnecessary tissue in the cutting off of the root, I will do so in the mouth. One objection to cutting off a root in the mouth is that I don't always know just where the line of attachment of the pericemental membrane leaves off all around that tooth. Sometimes, when I cut it off on one side, the attachment is away down low; on the other side I find it attached. Then, when I cut it off the result is that I have a pocket on the side of the root. If I extract it, I can see where pericemental tissue is left, and when I cut it off a little below that line, then I have pericemental tissue to put back in the mouth for attachment.

Personally, I think, that with good judgment and accurate diagnosis, as a rule, you can get along without going into the tissues with a knife, unless there is a high temperature. If the pain is keeping up, and if the temperature is low enough, I would rather give the patient an opiate to allay the pain for the next thirty-six hours, and after it is over, go in and open up the abscess. Some will say, if you wait that long, there will be a good deal of trouble, but I would rather operate when an acute condition is not present.

Dr. Thomas L. Gilmer:

I want to compliment the essayist as well as the other speakers on their very able discussion of this subject.

As to whether it is more desirable to extract teeth with persistent alveolar dental abscess as Dr. Marshall has indicated, and replant them, or to resect the roots is a question. My experience has not been the same as Dr. Marshall's. I have treated persistent alveolar abscesses in the way he indicated, and have been as careful as one could be in the use of aseptic and antiseptic precautions, but have not been able to get more than four or five years of usefulness from teeth thus replanted, and this has been the experience of a good many others whose practice I have been familiar with. If I am not mistaken, the attachment of replanted teeth is not through the revivification of the pericemental membrane as has been claimed by some, but through the deposition of bone into depressions made in the cementum by osteoclasts. A good many years ago I examined a replanted tooth that had been extracted. I found that this tooth had become absorbed very much as the deciduous teeth are. I made microscopic sections of a part of the root, which had not been destroyed and found the conditions I have indicated, that is bone built into osteoclastic excavations in the cementum. It seems to me, that in proportion as the osteoclasts are active, are we likely to get a tooth quickly set in the jaw, and also in proportion as they are active will the tooth's root be quickly cut away, and the tooth lost.

As to resection of roots of teeth for the cure of persistent alveolar abscess, I believe it is good practice. It is true, that many of us do not often have the treatment of abscesses requiring this treatment, but we do occasionally find cases which resist all treatment, other than extraction or resection of the roots for their cure. We find in the majority of instances, where surgical means are necessary to cure persistent abscesses, that there is caries of bone about the end of the root which must, in addition to the removal of the end of the root, be thoroughly curetted away.

I do not agree with Dr. Brophy regarding the method he advocated in the treatment of these cases. It is better, in my opinion, to raise a flap of the gum and periosteum and reach the root and remove the end of it, then pack for one or two days only, and then allow the soft tissues, which have been elevated, to drop back into place. I see no good reason why we should destroy the soft tissues over the excavated part. If much bone has been destroyed by caries such a procedure would leave an unnecessary large opening or depression.

As to the method of cutting off the roots of teeth. Dr. Pruyn tells us that it is quite as well in some instances to leave the parts of roots resected in place. I prefer to remove the severed end of the root as it may be a source of irritation. A small hoe excavator skilfully employed easily removes it. My practice in the past has been to make the cut for the severing of the end of the root as indicated by the essayist. That is drill a hole through the root with a bibeveled drill, following this with a cross-cut fissure bur for the remainder of the operation. Laterally I use the bibeveled drill for the entire operation. After drilling through the root I incline the drill to the right and left and quickly sever it. The objection to the bur is that it clogs easily, after which it cuts slowly.

With reference to the remarks made by Dr. Logan, that it is difficult to ascertain to what extent the end of the root has been denuded and on this account we have no guide as to how much to remove. By the use of the sharp steel probe we can judge of the extent very accurately. Dr. Pruyn suggested in the treatment of alveolar abscess that 95 per cent carbolic acid be forced through the canal into the abscess. It is certainly an excellent remedy in some cases, but he forgot to mention that it should be followed up with alcohol to neutralize the effect of the carbolic acid. Serious results have occasionally resulted from lack of this precaution.

Dr. Charles E. Abstein:

I would like to say a word or two in regard to those complicated cases of abscess in which there is glandular involvement. Let us take, for instance the lower first and second molars, where we have very small canals. Oftentimes in these cases we have a very diffuse swelling in which there is great enlargement, and, at times, it becomes infiltrated with pus. In these cases, from what information I have been able to gather from hospital records, we have deaths from these conditions. I believe that in these conditions we, as dentists, are justified in not only saving the teeth, but in saving the patient's life. We are justified in these conditions in not only extracting a tooth if it is affected, but in making a large incision with a view to relieving the pus and the hyperemia, and after this has been done you will find the patient will recover rapidly. There may be some objection raised about scarring the patient; but I say, save the patient's life. I have been able to gather, in a rough way, from the Augustana Hospital six deaths which they have had there from alveolar abscesses. At the German Hospital they have had one death from alveolar abscess. Some of these deaths were caused by the burrowing of pus into various other organs, as the brain, etc. In one case at the German Hospital in which septicemia occurred the pus got into the jugular vein. Therefore, I think we should look at these cases more in a surgical than dental light.

Dr. Pruyn (closing the discussion):

I remember very well the paper that Dr. Marshall mentioned as having been read by himself before one of our Chicago dental societies many years ago, but forgot it until he called our attention to it this evening.

Dr. Brophy speaks of diagnosis. That is our weak point in the treatment of dento-alveolar abscess. I will cite an illustration in this connection which was brought to my attention this evening. A brother practitioner told me that he had lost a patient, the member of one of the wealthiest families here, who had been his patient for years, because he failed to recognize the source of the trouble or rise of temperature in her case. She was treated by a general physician who also failed to find the source of the trouble. Afterward she passed into the hands of Dr. Gilmer, who found a dead pulp in a lower molar, and as a result there was a blind abscess, with exacerbations of temperature. Pus had formed and there was a serious condition of affairs.

This idea of splitting hairs on definitions is perhaps good, because it brings about a better understanding of terms; but I am not thoroughly in accord as yet with Dr. Black and Dr. Gilmer with regard to the word sinus and the word fistula. We speak of the maxillary sinus; we speak of frontal sinuses, and we understand that the frontal sinuses do not carry any other than healthy secretions in ordinary cases. We likewise speak of the ethmoidal sinus, and why we should split hairs about this matter, I cannot see for the life of me.

As to nomenclature, when I was a boy and studied the term, it was pronounced according to the old idea, as expressed by Dr. Bentley. But that was in the old days. We have progressed since then, and the correct pronunciation of the word now is that which was given by Dr. Brophy.

In following up abscess tracts, whether you call them sinuses or fistulæ, gold wire, such as is used for spectacle frames, can be used as a probe. You can straighten it out, and with the enlarged bulb on the end it makes a good probe for following up an abscess tract, because it will follow or go anywhere in most instances with a little twisting. I like such probes very much for this purpose.

Dr. Gilmer spoke of the removal of an amputated root. In many instances, the end of the root that we have amputated is so small that we do not know whether we can get it out entirely or not by a hoe excavator. In such cases cut quite largely with a round bur; drill and cut it all to pieces if anything is left. Of course, it is preferable to remove it entirely, but this cannot always be done.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held January 14, 1908, with the president, Dr. L. S. Tenney, in the Chair.

Dr. Elliott R. Carpenter read a paper entitled "Malocclusion."

DISCUSSION.

Dr. John Q. Byram, of Indianapolis:

First, permit me to express my appreciation to this society for being honored as a guest this evening. I have heard a great deal of the Odontological Society of Chicago and have known of its good work. I know all of its members personally, and I assure you it is a pleasure to be with you.

This subject is of interest to all of us. When I saw by the program that we were to have a paper on malocclusion, I infered that it was a paper along the lines of orthodontia, and when I was introduced to Dr. Fellows this evening, I naturally supposed that he was here to discuss some of the points in the paper from the standpoint of the rhinologist. I am glad the paper dealt with the subject as it did.

The paper is particularly interesting to every practitioner, and it is a subject that needs a great deal of attention. Every practitioner has had this subject brought very forcibly to him. I have had it brought forcibly to me in my own mouth. Because of an abscessed antrum I lost two molars and now I am almost striking my upper gums with my lower teeth.

I have another interesting case in one of my professional colleagues. When about fourteen years of age a dentist extracted a bicuspid and he has one of the meanest cases of malocclusion that I have ever dealt with. His upper centrals are so badly cupped out that the pulps, if they had not receded would be exposed. After taking impressions and studying the models I realized the extreme difficulty of properly correcting the case. His lower incisors were almost striking the gum; they cut out the upper incisors which had fallen lingually. The proper thing to have done would have been to open the bite, but he decided that was too much like work, and I agreed with him. So we used the inlay principle. This was before the advent of the cast inlay, and we made lingual shoes for the incisors and ground the lower incisors about the thickness of the metal to accommodate the occlusion, and they are rendering good service in his mouth. I only cite this case to show how extraction of the teeth will change the entire arch. If the orthodontists have done one good thing more than any others, it has been to impress upon the profession at large the necessity of proper occlusion.

A few years ago I visited Dr. M. P. Watson, of Detroit, who showed me models of a case, a little girl, about 13 years of age, in which there was a bad case of malocclusion. The first molars had been prematurely extracted. He was using appliances to throw the second molars into proper relation, and then the patient was referred to a crown and bridge specialist for the correction of that part of the malocclusion. We have all been more or less careless in this class of cases because, as Dr. Carpenter explained, with the older methods of crown and bridge work, where it was necessary to devitalize the pulps of one or two teeth in order to construct a bridge to correct this condition, we did not advise bridges in many cases. But since the advent of the cast inlay, I believe that it is our duty to look after these conditions and not wait until our patients are beyond middle age. I know from my own experience how annoying it is to attempt to properly masticate food. I have done some of this work, but not as much, of course, as Dr. Carpenter, and I believe that it should be a part of our work in the future to look out for conditions of this kind.

I do not know how it is in Chicago and vicinity, but down in Indiana we are probably a little careless at times about correcting many abnormal conditions, and I believe that the general tendency of the profession is to leave many malocclusions as they are rather than to correct them. It has been said many times that we have too many dentists, but we have not enough dentists to supply the demands if all mouths of people were properly treated, and I believe that we are becoming more impressed with this fact every year, that it should not be a question of treating a number of patients, but of doing all that absolutely needs to be done for the patients who consult us, and I believe that in the future we will take care of these cases to better advantage than we have done in the past.

I have been much interested in the doctor's inlay casting. I have done some cast inlay work, and I wish to cite a little experience that one of our dentists had a few weeks ago. He cast a four-toothed bridge, and in about three weeks the patient returned with that bridge badly broken. He had used the gold more than once and the only cause of failure we could figure was, that the continued melting of the gold had changed its properties so that it became brittle. I was wondering if Dr. Carpenter experienced any difficulty along the same line. We are not casting thirteen-tooth bridges, but we cast short bridges or cast the dummies, and then unite them by soldering.

If it is not off the subject, I would like to know if you are doing as much porcelain bridge work in Chicago as you did a few years ago? I believe this phase of the subject comes under the head of correcting malocclusion.

Dr. George J. Dennis:

It gives me great pleasure to be present at this meeting of the Odontological Society of Chicago, to meet so many faces that I have known for so many years.

This subject has been especially interesting to me tonight, because it is one I have always been more or less interested in. The subject of prenatal influence is one that is very hard, it seems to me, to prove. It is largely reasoning from insufficient premises to my mind as to the actual conditions. Of course, we can go back and find a history of injury in the mother at times, but the question arises in my mind as to whether that injury actually had some effect upon the fetus. It is a popular notion, it is true, and it certainly at times seems as if there must be a relation between the history and certain conditions we find in the child after birth. Sometimes the history seems to show very conclusively that we must accept it.

I do not want to disagree with Dr. Carpenter or with his conclusions, but the question comes up as to whether the severity of such an injury itself would be sufficient to produce such a serious defect as we see here in the models that Dr. Carpenter has presented. It is a fact that it is well to keep in mind and the collection of such facts is invaluable, eventually establishing such relations, if such a relation exists. As to the effect on the occlusion of the teeth by the removal of the first molar, I think I was among the first of dentists to save first molars when it was the fashion for them to be removed. At that time it seemed to me that the first molar was an effectual means of preserving the bite and the occlusion of the teeth in later life. If the first molar was removed, it seemed almost inevitable that there would be shortening of the teeth anterior to it, and if we will observe that point carefully we will discover that there has been a shortening of the bite by the removal of first molars.

Another interesting feature in malocclusion occurs to me in regard to the influence of the eruptive fevers of childhood—the exanthemata. We have all seen pitting and ridging of the teeth, and we all have known the difficulty of caring for such teeth and the removal of the distortion of such teeth, as well as the correction of the deformity of them. When a fever of sufficient severity occurs, and we find that the development of the enamel of the first molars and bicuspids occur, on the first molars principally, and of course very quickly after that the incisors and bicuspids, we find oftentimes that the deformity is so extensive that there is an actual lowering of the bite of the first molar tooth which results, I believe, in most cases in the lowering of the bite of every one of the other teeth anterior to it. Of course, that is a special necessity, and, it seems to me that any of the eruptive fevers of sufficient severity to cause that will cause malocclusion.

Another feature of malocclusion which occurs earlier in life is the condition of the postnasal space. That, of course, affects the rhinologist, but, it seems to me, dentists should also recognize the fact that any adenoids or enlarged tonsils will also affect the character of the arch and the teeth, not only in the height of the arch, but in the width. Whether that is always a factor or not, it is difficult to say. I do not believe our observations have been careful enough to establish that fact.

There is another fact in malocclusion that has recently been brought before the rhinologists in an article in *The Laryngoscope* in in which the study of the premaxillary bones has been taken up with reference to their effect upon the anterior teeth. The reason that that was taken up at that time is because of its effect upon the premaxillary ridge in the nose, and this is occupying the attention of rhinologists at the present time because of the efforts that are being made to correct deviations of the septum by means of the new operation called "the window resection," in which the maxillary bridge of the nose is one of the prominent difficulties in the correction of that deformity.

Dr. C. Gurnee Fellows: I have supported dentists for a number of years not only by exhibiting my own mouth but the mouths of some of my patients for treatment. In my practice I have had cases of earaches that have been referred to me for correction, which I found had nothing to do with the aurist, but had everything to do with the dentist. These were otalgias, and not inflammations of the ear, and it is not easy to determine where the work of the aurist ends, and the work of the dentist begins. I have sent, perhaps, more patients to dentists from my free clinic who presented themselves with earaches, when I found that they belonged to the dentist. Their earaches were cured by having their teeth corrected.

Dr. Dennis referred to the immediate connection between the shape of the mouth and bite. The first thing I look for, when I see anybody, whether a patient or not, even people on the street, is to see whether the person is a mouth breather or a nose breather, as I think the teeth, mouth and nose are intimately connected. A man who keeps his mouth open may do so because his teeth do not approximate, or because they are so prominent that he cannot close his mouth or lips. But back of it all one should see whether the man or woman breathes properly through the nose, and whether the high arch of the palate, which changes the shape of the upper jaw, is due to adenoids, and whether the teeth are secondarily malformed because of the enlarged tonsils or the presence of adenoids. We are taking care of adenoids and of cases of chronic inflammations of the ear, and are preventing deafness, so that the dentists will have less to do in one way, that is, fewer defects to correct, and more work to do in another way. But we will have to correct the lesser defects of the nose and throat in children.

We are operating on babies now because they do not take food properly from the mother's breast. I have operated on a baby three weeks old, removing its tonsils and adenoids, because the child could not breathe and eat at the same time. As a rule, however, we do not begin to operate on babies so early, because adenoids do not appear until later; but the impossibility of breathing through the nose properly at all times is so important that the child's health is affected, and the teeth secondarily are directly or indirectly affected.

The other connection between my nose work and dental work is with reference to the antrum and its inflammations. I see many cases of antral inflammation that have been through the hands of dentists without having been discovered, so that I would like to suggest to you that you try to discover them before somebody else does. When the teeth are pushing up through into the antrum the dentist ought to be able to discover them without waiting for the rhinologist to discover them for him.

The old method of pulling out all teeth on one side has gone by. A few years ago, when I practiced medicine in New Orleans, a physician had a patient who was suffering excruciating pain for a week or two. His son, who was studying dentistry at the time, pulled out an aching tooth, draining about an ounce of pus from the antrum, and thus assisted his father in curing the case. Since then we know how to correct antral troubles without pulling out all the teeth on one side of the face.

Dr. W. V.-B. Ames:

I have been extremely interested in what Dr. Carpenter has offered. I am glad, that through the exploiting of the casting of inlays Dr. Carpenter and others are waking to the fact that inlays can be used as parts of bridges. I was interested in noticing the title of Dr. Carpenter's paper, because the correction of malocclusion in one way or another in preventing peridental diseases was quite a hobby with me when I used to examine mouths, and I do not think there is any doubt but what the lateral stress upon the teeth is the cause of peridental inflammation and the breaking down of tissue, so that, if by any means we can properly align the teeth and brace them, so that they do not get this undue stress, we prevent the traumatism which results in the breaking down of tissue and of the trouble we are talking about. The joining of teeth by inlay bridges, or any other kind of bridges, is the rational means of preventing the breaking down of tissue from the lateral stress caused by malocclusion. That is the most there is to it. With the malocclusion, the improper lateral stress, and the breaking down of tissue as a result, the process of correction is rather plain and is what Dr. Carpenter has been urging tonight.

Dr. A. E. Royce:

I have been particularly interested in Dr. Carpenter's paper, because I have a real bad case on hand which is just beginning. Years ago, before I went to Europe, in a country town in New York state, I had a patient with what has been called a bull dog bite. While I was in the old country my successor got hold of one of these teeth and took it out, and it looked as if it went to pieces. Sixteen years ago the patient presented himself to me unable to masticate because the lower anterior teeth were biting into the gum back of the upper teeth. With the method of putting on crowns and bridges and putting in fillings, which was in use at that time, the patient got along nicely for sixteen years.

As to the correction of malocclusion of teeth, I believe an appliance that is at the command of the dentist is neglected. We have carbon paper or impression paper for determining whether the teeth occlude properly or not, and we neglect the use of that more than any one thing in our offices. All our fillings and crowns should be tested to see whether they are in proper occlusion or not. The teeth may be all in place. The occlusion may be bad on account of some change we may have made, or on account of some change made by some of the teeth moving. Pyorrhea can be prevented, or the cure of it assisted by the intelligent use of the carborundum wheel and the sand paper disc.

I believe the cast inlay is going to help us, but there has been so much said about it as if there will be no further use for gold pluggers. I believe, however, that there are many places in which gold pluggers will serve the purpose of our patients to great advantage.

Dr. J. G. Reid:

This paper is interesting. I have nothing new to propose, or any theory to advance other than to say that our attention has been called to these conditions which have been known to us for years, and probably we see the way clear now by which some improvement can be made toward correcting them, which is a very great advantage over the methods we have used in years gone by. I am sure, that in my own experience within the past year I have been able to do some things that have proved more satisfactory to me in my operations than in the times past. I still think, like my friend Royce, whom we look to as an operator of skill in the handling of gold, we have not got to the period even now where the gold pluggers become of no value. The gold plugger is as valuable today as it has been and will continue to be; at the same time, we find that with the improvements that are going on we will be able to do better dentistry for our patients than we have done in the past. I do not think there is any question about that at all. I believe that the possibilities of inlay work are great. I believe this work is bound to be a success. There is one great advantage, namely, that it will be better work. It has got to be right. You cannot make a patch with a gold inlay. It is a failure from the start. You can sometimes patch a gold filling after you have made a failure of it.

There are very few people living today who do not have some malocclusion of the teeth by the improper and imprudent extraction of the first molar. I carry the mark of one myself, and today it is a constant fight to keep that second molar in my mouth. But I am keeping it. I am fighting it all the time with the best skill and care and hygiene to keep it free from the advances of pyorrheal invasion. If this condition is manifesting itself in my mouth when I know how to care for it, you may imagine how patients suffer from it. Cases of the loss of these teeth are continually presenting themselves to us for correction, and I think that is one of the strongest points in the paper.

Dr. George W. Cook:

I think that this paper will do a great deal of good when it is published with the cuts, demonstrating the very thing that seems to have been one of the greatest difficulties for the dentist to overcome. The causes may be many. There is a lack of development of the teeth. If I had known the discussion was to be of this nature, I would have brought here a couple of models I have in my office.

One case is that of a man, 45 years of age, in which neither of the bicuspids in the upper jaw has ever developed. On one side, early in life, he lost the first molar, making a considerable space between the cuspid and the second molar, and this has brought about practically the loss of his grinding surface for the mastication of food. These molar teeth, in the eruption of the second and third molars, traveled forward until the second molar occluded practically with the bicuspids in the lower jaw, making a very bad deformity, with the tendency of the upper teeth to travel back, and has resulted in the lower anterior teeth striking against the lingual portion of the upper teeth, and as he has grown older there is difficulty in masticating. These teeth have been forced forward, producing the pyorrheal conditions from which he has suffered for several years.

Another case, which was interesting to me, was that of a woman who came to my office some two or three years ago, in which the first and second bicuspids in the lower jaw had never erupted. The importance of such cases as we have had presented tonight is apparent in instructing the younger dentists especially to look carefully after this particular factor and to correct earlier in life some of the deformities which will eventually, if allowed to go on, result in the loss of teeth.

The etiology of these particular cases is obscure, and we might discuss the subject at great length without coming to a satisfactory conclusion as to what the cause really is. But whatever the cause, we as dentists first meet the conditions and have to overcome them, regardless of whether it was before or after birth the trouble started, and I think the essayist has brought out some very interesting points for the correction of such irregularities.

I saw a very interesting case only a short time ago where a man had worn the lower central incisors down to the gum through the loss of the two first permanent molars, making a malocclusion there, and after some years he had extensive erosion on the teeth. The man said that some five or six years ago his teeth began to be sensitive to heat and cold. He had consulted a number of dentists, who told him that it would be impossible to correct the irregularity, and that that was probably the cause of his erosion. The second molar had traveled forward to such an extent that it almost touched the bicuspids. You can imagine, therefore, they were tipped forward considerably, and on this second molar there was an erosion, not abrasion, because there was no occlusion there except as it touched the distal portion of the molar tooth. The teeth were worn down, just slanted off as if polished with the buccal surfaces of the molar teeth—worn completely down to the gum margin, leaving the inner cusps high. The teeth slanted off as if ground down. From some tests that were made it was found that the condition of the saliva was extremely acid, and those of you who heard the paper read by Dr. Hinkins at the last meeting of the Chicago-Odontographic Society, will remember hearing him say that the saliva as it came from the ducts was acid in more cases than we would expect to find it, and in this case it was very marked. Bacteriological examinations revealed the fact that there was but little fermentation. This case, to my mind, demonstrated the condition of both abrasion and erosion, and I would say, without knowing the earlier factors in the case, it was due almost entirely to malocclusion. Probably the acid condition was the sequel following malocclusion early in life. The man was 48 years of age, and his mouth was in such a condition that it seemed almost beyond repair with anything that we could do other than extract the teeth.

Dr. L. L. Davis:

There is one part of the paper that appeals to me very forcibly just now from the fact that I have under my care two little patients who previously were under the care of other dentists, one of them being a young man who is practicing dentistry in this city. In each case the trouble has come through the absolute neglect of essentials in caring for the first permanent molar. One of the cases is that of a child 11 years of age. The members of this family have been patients of mine for nearly fifteen years. They thought it was too much trouble to bring the child into the city to see me, so that during the last three or four years, since the boy has gotten his second teeth, he has been going to see a dentist in Evanston. The mother brought him into my office about three weeks ago because this dentist said to her that the teeth ought to come out—all four of his first molars, are the only teeth in the back of the jaw. This dentist was going to extract them, and he has neglected them to such an extent that there are openings through the bifurcations of the roots. He has put arsenic in two out of three of them, and you can imagine what anyone has to contend with to try and hold these teeth for that patient.

Another case I have in mind is a little nearer to the city. The child is 14 years of age and is attending high school. This was the first time I had seen her. She was brought to me to be relieved of the toothache. She could not go to school regularly because her teeth hurt her so much. In this case, after examining the teeth carefully, I picked out seven pieces of cotton which were put in between the teeth in various portions of the jaw, with spaces where the cotton came out from between the teeth varying in size from the 64th to the 16th of an inch. Here was a case in which cotton was constantly applied to relieve pain. A second bicuspid had been extracted, but for what reason I do not know. The dentist she had been to had expanded the arch. He had a fairly good sized gap there, and was going to destroy the pulp of the first molar and bridge across that space. He had already put in twenty-four inlays in the front teeth. The color of the girl's teeth was a pearl blue, poor in structure, and she must have had considerable caries of the teeth. But every inlay was as yellow as a yellow body could possibly make it. You can imagine how that girl's mouth looked. This case illustrates how very important it is to educate the younger dentists to take care of these first permanent molars. These two cases have strongly emphasized that point in my mind, and that is one point in the paper I should like the greatest amount of stress put on.

Dr. J. E. Hinkins:

I have enjoyed the paper of the essayist very much. Up to within thirty days ago I had some decided notions about prenatal disturbances, my attention having been first called to it when I began to practice.

A gentleman came to me to have a lower and partial upper denture made. He informed me that he had never had any permanent teeth. He was about 40 years of age. He had two or three of his temporary teeth left. Plates were inserted, and these were worn for two years, after which the teeth came out, and full dentures were put in. He has been married twice, having married sisters, and has raised two families. There were four children by his first wife, whose teeth were normal. There were three children by the second wife. Two of these have normal teeth of good structure, while the other has only nineteen permanent teeth. At the time the mother was pregnant she suffered from uremic poisoning. Formerly I gave much study to this subject, but since the work done by Professor Howell on acidosis, and the work done by Professor Chittenden, of Yale University on osmosis, hydrolysis and oxidation, I have come to the conclusion that it is left for the future to decide.

The essayist referred to a paper I read many years ago, and in connection with what he has said, I believe it is the duty of every man to consider the welfare of his patients and their health. In that paper I advocated the extraction of the first molar. I want to differ with the essayist at this point, for the reason that I do not like his phraseology. I do not think the first molar is the keystone to the arch, but it is the base of the arch. If you will follow up mechanics, you will find that the keystone in the arch is usually the last one that is put in.

I cannot say that I am particularly enthusiastic over abutments for bridges made of inlays, because at one time I was a bridge builder myself, and can see their imperfections, and my observation has been that the mechanical principles that apply to bridges built over rivers or streams apply with equal force to bridges that are put in the mouth.

Another thing we must consider in the casting of inlays is metallurgy. After looking over the properties of different elements, I do believe that certain of the elements which come in contact with gold will change the fibers of gold to a crystalline, and *vice versa.* I think that is why we have a good many failures in making inlay bridges with a combination of metals. In heating them above a certain temperature, instead of the bridge being fibrous it becomes crystalline and breaks. But that problem is left for the metallurgists to work out.

To go back to the question of the extraction of the first permanent molars, my attention was called to it by Dr. Allport to the point that in neurasthenic patients, before the age of twelve, if they had a crowded arch, and they had one or more of the first molars, with exposed pulps, with a child of that temperament it was good practice to extract them regardless of the interdigitation of the cusps of the teeth. It makes the bite a little shorter. With a patient of that kind, I would rather have twenty-eight teeth with the interdigitation antero-posteriorly, and all of them occlude, than to have thirty-two bad teeth and be unable to do a good, honest operation for my patient. In all cases in which I have extracted the first permanent molars before the twelfth year of age, I have never seen any tipped teeth. After twelve years, I will hang onto the first molar as long as anyone. That class of practice has been very satisfactory to me, and I have not had many poor molars.

I had a patient in my office not long since for whom I extracted teeth a good many years ago, and there were no signs of pyorrhea and I have not seen pyorrhea in any of these cases. But the bite was shorter.

Inlay bridges in many of these cases are indicated and are good things. I have a great deal of respect for the gold plugger and for the use of gold foil, and I have been fortunate enough not to have put in very many porcelain inlays. I will wait a while and see the results of the cast inlays in these cases.

Dr. L. S. Tenney:

This has been an exceedingly interesting meeting, and as I look back over the meetings of the last year or so, it seems I cannot recall a time when we have had a subject presented and discussed that has appeared to be of such absorbing interest to each member.

I have been very much instructed and edified tonight, and as I look over my own practice, it seems to me, I have been in the habit of neglecting a great many things which this paper and the discussions have called our attention to. I think the drift of dentistry in the last few years has been rather to look too much into the new and neglect the old, and we are so engrossed with our porcelain fillings and gold castings, that we are apt to forget some of the fundamental principles of practice which have a great deal more bearing as regards the appearance, the usefulness and the comfort of the teeth.

Dr. Carpenter (closing the discussion):

The professions of dentistry and of medicine feel generally that there is considerable kibosh about the prenatal proposition, but I have only awakened to a sense of my duty, because it is only by divers and sundry cases and getting them together for clinical data that we are able to decide in regard to prenatal influences on the noneruption and the nondevelopment of teeth. Beginning as all of us have with the burnished matrix for inlays, my observation from my failures and the clinical data presented by other men from elbow to elbow, and from heart to heart talks among my confreres have made this one thing clear to me, and that is, that the cast inlay has absolutely no more relation to the original burnished one than a good gold filling has to the ordinary cement filling, for the reason that a cast inlay, properly and accurately cast, is so much more closely adapted to the cavity walls than a burnished one can possibly be, that therein lies the secret of its retention. Those of you who have become interested enough in cast inlay work, notice occasionally, whether it is a question of heat or the technique you may use in casting those inlays, that you will have one which will fit so tight it will be next to impossible to dislodge even when not cemented to place. The only failures I have had so far in regard to inlays and inlay attachments for bridges have come from burnished inlays. It may be possible that this is not entirely due to the difference in the technique or method between cast inlay work and burnished inlay work. It may be also due to faulty or improper cavity preparation. When I first began, I followed the general run of cavity preparation, which was far from being intelligently done, and I have had several cases of inlays I put in under the old methods of burnishing them which ultimately would be tipped or rocked out of the cavity, and after three or four of those I awoke to the fact that there was an entirely different cavity preparation necessary from a gold filling. The seating was important, and that it should be one positively of angles. Many dentists will disagree with me in that regard, but I have been bold enough, and after having once learned a sad lesson I was encouraged to go ahead fearlessly and make inlay bridges.

In this little bridge here (indicating), you will see where I carry out with the small amount of space I have that long flat surface, even though it is rounded, carrying it at a right angle from the base clear to the occlusal edge. On that I rely. Another thing you will notice is that the bridge is narrow. The first one I put in was as wide as the molar. That was a mistake. I have not the slightest fear of that coming out—not the slightest. I may live to regret it, but I have confidence enough in my own knowledge of angles for retention and seats in these cases to feel very positive.

With reference to that part of my paper that dealt with prenatal influences, I will say that it is not simply a question of believing in this theory explicitly and implicitly, but I believe it is my duty, inasmuch as I had the data to present, to do so that it might be used ultimately for clinical research and for comparison.

I am extremely grateful for your patience and tolerance in having listened to my paper as presented. It was not my desire to claim anything specially new, but to present a collection of facts and present them to you for what they are worth. So far as the models are concerned, they speak for themselves.

The Semi-Centennial Jubilee Meeting of the Indiana State Dental Association, at Indianapolis, June 4-5-6, will have for essayists the following well known men:

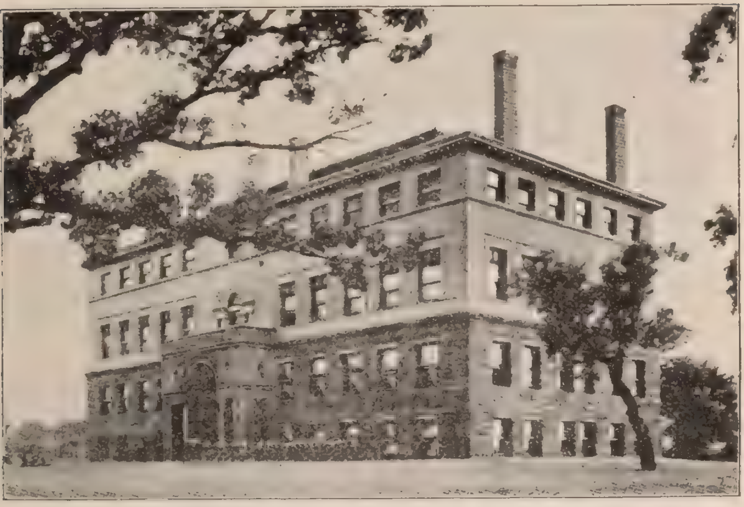
Dr. Truman W. Brophy, Chicago, Ill., subject, "The Deformity of Cleft Palate; Its Influence Physically and Mentally"; Dr. George Zederbaum, Charlotte, Mich., subject, "The Education of a Nation. Teeth"; Dr. H. B. Holmes, Louisville, Ky., subject, "The Influence and Benefits of Associations"; Dr. M. H. Fletcher, Cincinnati, Ohio, subject, "Alveolitis; the Disease of Which Pyorrhea Alveolaris is One Stage"; Dr. G. V. Black, Chicago, Ill., subject, "Supernumerary Teeth."

THE DENTAL COLLEGES OF AMERICA

Harvard Dental School, Boston, Mass. First Class Graduated 1869. Total Number of Graduates to January, 1908, 621. The Only Endowed Dental School in the United States.

Tufts College Dental School, Boston, Mass. First Class Graduated 1869. Total Number of Graduates to January, 1908, 1,093.

THE DENTAL COLLEGES OF AMERICA



College of Dentistry, University of Minnesota, Minneapolis, Minn. First Class Graduated 1885. Total Number of Graduates to January, 1908, 426.

New Orleans College of Dentistry, New Orleans, La. First Class Graduated 1900. Total Number of Graduates to January, 1908, 137.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

AN EXCELLENT TEMPORARY FILLING.

The editor of the DENTAL REVIEW has had his attention called to a very useful temporary filling material through the kindness of his good friend Dr. Harold Clark, of Toronto, Canada. It is an oxy sulphate of zinc, and is made in the following way:

"For the powder: To each ounce of ordinary oxid of zinc add, for coloring purposes only, two grains of chrome yellow and four grains of raw sienna. This must be carefully and *thoroughly* mixed. For the fluid make two solutions, "a" and "b." "a" is a saturated solution of zinc sulphide. "b" is a solution of 12 grains of boracic acid to ʒi of water. Now mix three parts of "a" to one part of "b" and the fluid for the filling is ready."

Dr. Clark says he uses the material "in practically all cavities where a temporary stopping is indicated, unless where one wishes the separating influence of gutta percha. In all those hypersensitive cavities, so common in young and nervous patients this material is most useful. In such cases I simply wash out the cavities with warm water, dry them and fill with the above material, well loaded with pulverized thymol crystals. I invariably do this with nervous children. If they have several cavities the first sitting is occupied with filling all the open cavities with this treatment filling. It is most gratifying to find unbearably sensitive cavities so modified that they exhibit nothing but the most ordinary sensation under instrumentation. My use of this combination led me years ago to use it as an under, or intermediate, filling for those cavities in immature teeth where thorough excavation must expose the pulp. In such cases I make a note in my diagram when I purpose removing the entire filling to make proper cavity preparation."

The editor has tested this preparation sufficiently to be assured of its usefulness. As Dr. Clark says, it greatly relieves the sensitiveness of cavities and leaves them in much better condition for thorough preparation. It is inexpensive, can be readily mixed and inserted, and is easily removed from the cavity. Dr. Clark, in assenting to the publication of the formula, makes it possible for every dentist to prepare a material which will be of great benefit to him in practice, and will add appreciably to the comfort of his patients.

INDIANA STATE DENTAL ASSOCIATION, FIFTIETH ANNIVERSARY.

On June 4-5-6, 1908, this society will hold a semi-centennial jubilee meeting at Indianapolis, which promises to be a very great success. The associations of neighboring states have been cordially invited as guests of the Indiana society, and an essayist has been selected by each of the following states to represent their state association at the meeting: Illinois, Michigan, Ohio and Kentucky. Besides this these states have agreed to furnish fifty clinicians. Other state societies have also been invited to send clinicians, so the outlook for a good program is most excellent.

The only thing now remaining is for the profession to attend. The Indiana men will look after the rest, and their reputation for hospitality should draw several thousand dentists to Indianapolis at the date of the meeting. A fiftieth anniversary of a state society means something for the growth of the profession. It is an event well worthy of commemoration, and we bespeak for Indiana a large attendance. Indianapolis is a beautiful city, and particularly so at the time of year the meeting is to held, so the visitor may count on a most delightful time in addition to the benefits to be derived from the professional program. On to Indianapolis.

THE EDITOR'S DESK.

THE VALUE OF THE HOME.

A home is not a house, nor is a house necessarily a home. But a club or a boarding house is neither one thing nor the other and never can be. It may do as a place of last resort, or a temporary make-shift, but it is a poor place in which to think good thoughts or do good deeds. Imagine a man resolving to live a better life, in the hurly burly of a big hotel. Ten to one somebody will come along in the midst of his reverie, and ask him to have a drink—which they do say is not at all conducive to living a better life.

The home is the sanctuary of the family, the place where the better impulses are born, and where the true growth of manhood is stimulated. If a man is not good in his home he is seldom good any place, but the reverse cannot be said because a man is sometimes a heathen Chinese in public, and a model of probity within the precincts of his own home. The home is the purifier of society, and the most stable asset of the commonwealth. Without the home we would all be like a lot of passengers in transit through life.

The man who buys a home and pays for it is anchored to something substantial in life. There is one spot at least that holds an especial interest for him, a place to which he can retire as a haven of refuge when all the rest of the world wearies him. No matter how tempest-tossed a man may be with conflicting interests outside, however severe the stress and strain of business cares or the nagging of an enemy, whatever may be said of him in public in the way of harsh criticism or unjust censure, the moment he reaches the confines of his own home he is certain of open-armed confidence and the solace which comes from being understood. The world may misjudge and malign a man, but at home he is estimated at his true worth. He is taken at par. His reputation is never discounted, and he is sure of receiving credit for everything if he makes good—sometimes he is credited when he doesn't make very good.

There is no place where Charity is so broad, or forgiveness so certain as in the home. "To know all is to forgive all," and in the home a man is known.

The home is the sheet anchor of civilization. Think of the condition of any community where most of the people consist of a floating population. There is nothing substantial about such a place. To be stable, a place must have community interests, and you cannot have such interests without the nucleus of the home.

The defeated politician seeks his home after the contest with the certainty of finding comfort and solace. There is no salve so effective in taking out the sting of defeat as the sympathy and cheer of the family circle.

The successful politician or the great statesman comes to his home wearied from shaking hands with lines of people he never saw before and never expects to see again. He sinks down with a sigh of relief into his old familiar arm chair, placed conveniently with loving thought for his reception. His lame hand is let alone, and he receives kisses instead of shakes. What a relief! The homage of all the world is nothing compared to this. And so it is in every walk of life—the home is the one sure refuge in time of trouble or in time of triumph.

You sometimes hear people prate about the expense and responsibility of keeping up a home. Fie, and fiddle-de-dee-dee! Don't you believe it, or if you believe it don't let it deceive you. If it is a responsibility for anyone it is for the wife and mother, and it is the kind of responsibility that every woman should welcome. There may not be so much glamor about it as there is in occupying the chair at a woman's club meeting, but there is a heap more common sense and comfort in it. It fits.

Let every young man who looks forward to an old age of contentment and competence begin to look about early in life with the idea of establishing himself in a home. It will stay put, when everything else is scattered.

WANTED—THE NAME OF THE DONOR.

I wish to thank some one, but I have neither his name nor address. In January last I received, through the mail, a small piece of rolled gold with the following history. It was the first gold filling inserted in a tooth by the late Dr. W. W. Allport, when he began practice in Chicago in 1854. It remained in the patient's tooth for 34 years, doing excellent service, when the tooth was extracted on account of pyorrhea. The filling was removed from the tooth and rolled into a thin plate, and I can recall Dr. Allport showing it with pardonable pride at the time. Where it has been since 1889 I do not know, nor can I guess who was kind enough to send it to me. I should like to learn this in order to express my thanks.

I prize this bit of gold very highly, and as I look at it I am reminded of what Dr. Allport related to me regarding the character of his outfit in those early days. His equipment was the most meager. He had no dental chair and, if I remember correctly, he operated in a rocking chair tipped back by a block of wood under the rockers. His operating case was an ordinary plain table with a newspaper covering it. But even under such circumstances he did work which was a monument to his genius as an operator.

And also when I look at this bit of gold I am led to conjecture as to how many of our present day inlays will successfully preserve teeth thirty-four years.

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Inlay Wax Models for Cast Gold Fillings:—After the wax model of the cavity has been removed from the tooth, it can be made smooth by painting with chloroform—the surface will be perfect. This is superior to heat or anything else I have used.—*A. W. Harlan, New York, N. Y.*

The Tooth Brush:—In instructing patients in regard to the use of the tooth brush and making them live up to the highest possibilities of prophylaxis, we should be careful to direct them as to the proper method of using the brush. There are many people who do not seem to be intelligent enough to use the tooth brush effectively.—*C. N. J.*

Cleaning Teeth:—I have interested myself in the subject of cleaning teeth and am gradually preparing and equipping myself to do the work, and am working myself up into a frame of mind where I get paid for it, when the menial part of the work will disappear. I feel that I am doing a dignified and useful thing in cleaning teeth.—*E. J. Perry, Chicago.*

Success:—The successful man is born with a very ordinary amount of skill and ability, and with a strong faculty for observing and preserving. A good way for those to proceed who are lacking in perseverence is to take short views and accomplish each day's task as it comes; to overcome the obstacle nearest at hand and let the future, with its problems, take care of itself.—*R. L. Graber, Peoria, Ill.*

Polishing Teeth Beneath the Gingival Margins:—I think that something better ought to be devised for the purpose of polishing the surfaces of teeth beneath the gum margins than orange-wood points. A point of bone would be more delicate and would have the rigidity, and charge itself with pumice, and certainly a point of aluminum might be used to work on surfaces well beneath the gingival margins.—*W. V.-B. Ames, Chicago.*

Wire Ligatures:—I have been surprised that dentists have not raised a protest against the use of wire ligatures around teeth that are unbanded, to force them out or into alignment. There is always a tendency of these wires to pass toward the gingival margins and press upon the pericemental membrane. I have seen some of these cases that were simply terrible, and it would seem to me that it was decidedly under the head of malpractice in dentistry.—*C. S. Case, Chicago.*

Relation of Lips in Taking a Bite:—The upper rim of wax should extend about 1½ mm. below the upper lip when the latter is at rest. Variations from this rule, however, are occasionally necessary. The lower rim should be of such height that when in contact with the upper rim, the lower lip may rest normally against the upper without requiring any muscular effort to bring it in that position. If the rim is too short the lower lip will be pursed out and depressed; if too long, muscular effort will be necessary to bring it in contact with the upper lip.—*J. H. Prothero, Chicago.*

New Materials:—Practically all that we know of materials that are used in prosthesis is given to us by the journal advertisements, and not through long series of investigations by painstaking thinkers. The aim of the age seems to be to get something new and forget the principles that are perhaps as old as time and have been relegated to the museum of antiquity, and especially if they happen to be two or three years old, forgetting, as it were, that we should study more closely all the known phenomena connected with all materials and all processes that enter into our professional life.—*George W. Cook, Chicago.*

Educating the Public:—The people in general have learned, or are rapidly learning, that a frequent visit to the dentist saves them pain, trouble and expense, and saves their teeth besides. I have sometimes almost wished that the loss of a tooth meant sure death. Everyone then who had the slightest idea that anything could be wrong with his or her teeth would visit the dentist, and then it would be so easy for the dentist to fill the little cavities he would find, and so easy for the patient to have it done, that visiting the dentist would become a pleasure. Some dentists are telling their patients all about these things.—*C. W. Cox, Batavia, Ill.*

Care in Extensive Operations in Relation to Age of Patient: —Extensive operations, particularly in orthodontia, have been done on girls at the age of puberty and these conditions should be considered very seriously. I am satisfied in my own mind that much harm has been done and is being done. There is also a time, say from forty to forty-five or fifty, when operations on women in the midst of change of life, should be done with the greatest judgment. Teeth should not be extracted at certain times during this period. I can recall several cases in my own practice where the best results were not obtained by removing teeth at that time of life.—*J. E. Hinkins. Chicago.*

Arrangement of Artificial Teeth—Artificial teeth, as they come to us from the manufacturer, are beautiful duplications of the forms and likeness of unworn natural teeth, and selections can be made that will fulfill all the requirements so far as looks are concerned. Such teeth can be arranged upon casts so as to simulate labially, lingually, buccally and proximally almost any type of restoration desired. Occlusally the bicuspids and molars, if arranged without any change or modification of form, can result only in the coming together of surfaces pointed or rounded, or both—small in area, few in number—and are, therefore, deficient in reducing power, the grinding force being essentially, if not altogether, eliminated.—*T. W. Pritchett, Whitehall, Ill.*

Treatment of the Mouth in Extreme Cases of Neglect:—In extreme cases of neglect, misuse or disuse of the teeth, where any effort at relief would be accompanied by much hemorrhage, I have found it sometimes advisable to begin with a more or less superficial treatment of the mouth and dismissing the patient with instructions to use hot bicarbonate of soda solution freely until the subsequent sitting, when some point would be selected to begin with thoroughness. Where pyorrhea is present, the affected tooth should be scaled with all the skill and exactness at the operator's command, using great care to avoid injury to the pericemental membrane. If more than one tooth is involved each tooth should be carefully scaled on all surfaces before proceeding to its neighbor.—*C. E. Meerhoff, Chicago.*

Anatomical Articulators:—In the use of any one of these various anatomical articulators, we must not expect to be able to construct dentures for the edentulous mouth, and have them work in the mouth as they did in the articulator. Work as hard as we may to get the dentures as accurate as possible, I believe when we put them in the mouth we will still find work to do. The anatomical articulators are a closer approach to the mandibular movements than the plane line articulator, and therefore an improvement and it is our duty to employ that which will insure better results than we could obtain by former methods. But we should never dismiss the patient until every possible movement in occlusion has been observed, and until we have obtained the three-point contact or diverging contact of the different surfaces which will prevent displacement.—*H. J. Goslee, Chicago.*

Adjusting a Detached Post Crown:—Prepare the end of the root by grinding carefully and evenly just under the gingival margin. If decay extends rootwise under the gum at any point, excavate thoroughly with a bur. Grind the porcelain to an approximate fit, and leave the post long enough to prevent the crown from quite touching the end of the root at any point. Take a small piece of warm inlay wax and without drying the parts, press it gently against the root. Hold it in position with the left hand and with the right press the post and crown to position, forcing the post through the wax and up the enlarged root canal and pressing the base of the crown into the wax. Remove the crown from the post and proceed as with a cast inlay, being careful to observe details as to trimming wax carefully.—*Arthur G. Smith, Peoria, Ill.*

MEMORANDA.

THE TENNESSEE STATE DENTAL ASSOCIATION.

This association will hold its forty-first annual meeting in Nashville, May 7-8-9, 1908. A hearty welcome is extended to all ethical practitioners.

CALIFORNIA STATE DENTAL ASSOCIATION.

The California State Dental Association will hold its annual session in San Francisco, June 9, 10 and 11, 1908.

At least two prominent clinicians are expected from the East; also larger and better exhibits than ever before. C. E. POST, Secretary.

KENTUCKY STATE DENTAL ASSOCIATION.

The Kentucky State Dental Association will hold its business sessions at Louisville, June 2d and 3d. The regular program will be co-operative with the Semi-Centennial Jubilee meeting at Indianapolis, June 4-5-6, 1908.

ILLINOIS STATE DENTAL SOCIETY.

The forty-fourth annual meeting of the Illinois State Dental Society will be held at Springfield, May 12, 13, 14 and 15, 1908.

The sessions and clinics will be held in the State Armory building. Wednesday and Friday mornings will be devoted to clinics, other sessions to papers and discussions.

ARTHUR D. BLACK, Secretary, 31 Washington Street, Chicago.

MISSOURI STATE DENTAL ASSOCIATION.

The forty-third annual meeting of the Missouri State Dental Association will convene in St. Louis June 1, 2 and 3, 1908, at the Planters' hotel. Rates: $1.50 and up per day. Efforts are being made to make this the most successful meeting in the history of the association. Distinguished members of the profession from out of the state will be present. All ethical members of the profession are cordially invited to come.

E. P. DAMERON,
Corresponding Secretary, St. Louis, Mo.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The Minnesota State Board of Dental Examiners will hold a special meeting at the State University, Dental Department, in Minneapolis, beginning at nine o'clock, June 10th, 1908. At this meeting all applicants for registration in this State will be examined. For further information apply to

GEO. S. TODD, Secretary.
Lake City, Minn.

KANSAS STATE BOARD OF DENTAL EXAMINERS.

The next meeting for examination of applicants for registration will be held in Topeka, May 13, 14, 15 and 16, in the Copeland Hotel annex. The first session will begin the 13th at 7 p. m.

A graduate of a reputable college is not required to take an examination. The fee is $25.

The examination will be practical and theoretical. These taking the examination are expected to furnish all instruments except a vulcanizer.

Those expecting to take the examination will please write the secretary for complete information.

The Copeland hotel will be headquarters.

F. O. HETRICK, Secretary, Ottawa, Kas.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

876,997. Electrical, dental, and surgical appliance, H. F. Pressey, Bridgeport, Conn.

877,585. Rubbing apparatus for the gums, L. J. F. Nicolai, Dresden, Germany.

878,486. Tooth-brush, L. H. Crowell, deceased, Halifax, Nova Scotia, Canada; E. R. and M. O. Crowell, executors.

878,164. Tooth-brush, W. N. Taylor, Diamond, Cal.

12,753. Denture, reissue, R. M. Craig, Dennison, Ohio.

879,537. Dental implement, J. Gartrell, Washington, D. C.

879,254. Manually-controlled dental engine, J. L. Gauthier, Washington, D. C.

879,179. Specialist's chair, W. H. Kersey, Indianapolis, Ind.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

NATIONAL DENTAL ASSOCIATION.

The twelfth annual meeting of the association will be held in Boston on July 28 to 31, inclusive, and promises to be one of the most important in the history of the society. It is twenty-eight years since our National Society has held a meeting in New England and it is confidently predicted that the attendance and interest of this gathering will surpass that of any previous session. Hotel Somerset, on Commonwealth avenue, has been selected as headquarters of the association and where all meetings will be held, including those of sections. The clinics will be held in Tufts College Dental School, on Huntington avenue, on the forenoons of Wednesday and Thursday. Rates at Hotel Somerset: Two in room with bath, $4 per day; one in room, with bath, $3 per day; two in room, without bath, $3.50 per day; one in room, without bath, $2.50 per day. For reservations, etc., apply to the chairman of the local committee of arrangements, Dr. W. E. Boardman, 419 Boylston street, Boston.

Membership in the association is limited to delegates from state societies, but a most cordial invitation is extended to all reputable dentists to attend the meeting.

DR. WILLIAM CARR, President,
35 West Forty-sixth street, New York.

DR. CHARLES S. BUTLER, Secretary, Buffalo, N. Y.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the state of Illinois will be held in Chicago, at the Northwestern University Dental School, southeast corner of Lake and Dearborn streets, beginning Thursday, June 4, 1908, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school, or dental department of a reputable university, or (3) is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board.

Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty ($20) dollars, with the additional fee of five ($5) dollars for a license.

Address all communications to J. G. Reid, secretary, 1204 Trude building, Chicago, Ill.

THE

DENTAL REVIEW.

Vol. XXII. CHICAGO, MAY, 1908. No. 5

A CONSIDERATION OF WESTERN DENTAL PHILOSOPHY BY AN EASTERN MAN.*

BY CHARLES MC MANUS, D. D. S., HARTFORD, CONN.

I have wanted to attend a meeting of this club for several years past, and in a moment of temporary insanity I gave my friend Dr. Wedelstaedt the idea that I might be induced to read a little paper to you. I had in mind to speak of the development—historically—of certain, or rather uncertain, instruments, thinking that perhaps you men who had had so much to do with systematic and exact methods during the past ten years, might like to see what other dentists had been vaguely groping for during the past ten centuries.

But when I received the program with my name attached to an *essay* entitled "A Consideration of Western Dental Philosophy by an Eastern Man," my courage failed and I have been in a state of intellectual collapse ever since.

But with the subject assigned me I can only ask you to remember Louis Stevenson's stanzas,

> "Of all my verse like not a single line
> But like my title for it is not mine,"

and let me do the best I can to "talk up" to a rather large subject. I disclaim any idea of speaking as an eastern man, least of all as an eastern dentist, but desire to consider certain aspects of the subject as any one might who was interested in the matter.

If philosophy is a science of the most fundamental matters and a philosopher is one loving not only wisdom but cherishing a handicraft or art, or to go farther and quote one who speaks with authority, that, "He who has a taste for any sort of knowledge and who is curious to learn and is *never satisfied,* may justly be termed a philosopher," then you western men have a right to claim that you are practicing our art in a rather more philosophical manner than some other sections of our broad country. I do not, ordinarily, like any feeling of sectionalism in scientific work; I do not even like any nationalism in it. That fine phrase "American dentistry," is, to my mind, a narrow one. All parts of our land and all civilized countries have contributed to upbuild dentistry and there is glory enough for us all.

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*Read before the G. V. Black Club, St. Paul, Minn., February, 1908.

But on the other hand, some nations have done more than others and certain sections have contributed far more than their share of good hard work and they deserve at least the praise of intelligent recognition. The surgeons of the east—that branch of the medical profession that can use their hands—have beaten a pathway to the doors of the Mayos at Rochester and were your meeting held at a less rigorous season of the year you might have heard the stealthy tread of an Indian file finishing their long journey to your door. But you have not waited for them, you have left your homes and gone forth like missionaries and crusaders preaching and demonstrating the truth as you see it, and your text has been "principles and system and exactness."

For two thousand years men have been treating diseases of the teeth, for at least four hundred years they have been trying to fill teeth with gold, but until comparatively recent times, owing to unsufficient knowledge and inefficient methods, the work has been largely unsystematic and, to use a phrase of Fauchard's, hap-hazard. Not that good lasting work in the filling of teeth was not done, but it depended too much on the personal dexterity of the individual, helped in many cases by a convenient immunity on the part of the patient. Some exquisite operators were produced, men who being naturally mechanical, took to the work, but on the part of the average dentist he followed the Shakespearean advice and "stopped a hole to keep the wind away" and sometimes builded better than he knew, but unfortunately for others, he didn't *know.* The operation was largely empirical and the result was technically a "nostrum." Without system and exact methods, and there were neither, these men could not be proper teachers for the average pupil—eventually the dentist that the people always have had and always will have to depend upon. And as the regular filling of teeth with gold is an operation which for many years, notwithstanding monthly prophylaxis, the various inlays and machine methods, even a higher preliminary medical education, etc., etc., will continue to form a large share of our daily work, the matter might have assumed a serious aspect.

Individual teaching was necessarily unsystematic and until recent times even collegiate instruction tended in that direction, but with the advent of technique-work, a sort of dental manual training, and the beginning, at least, of a nomenclature, things began to look more hopeful. The want of accuracy of expression has interfered very materially with the interchange of our ideas. Some of you will remember that on a visit to the east several years ago your nomenclature which you could speak trippingly on the tongue seemed a strange and mysterious language to many of your hearers. It was not your fault if we were in the condition of the man who said, "I hear what you say, but I don't understand what you mean." It may be heresy to say so but I think that a unification of our nomenclature would be of more real value to us as a profession than a unification of our state laws.

If we are largely beholden to the west for technique and nomenclature, we are also indebted to you for the scientific systematization of instruments and of definite and exact methods of using them. Not but we have had enough sets of instruments and very valuable ones, too; excavators without number, pluggers of various forms and often impossible angles, scalers for the local treatment of phagedenic pericementitis (were I at home I might say "Riggs' disease"). Indeed, very lately an eastern man has produced a set of, I think, one hundred and fifty instruments for the cure of that disease. I am told that you cannot take away, or even add, one instrument to that set; it is complete, almost as complete as some of our failures and I am reminded of that beautiful thought of Browning's,

> "A little more and how much it is
> And a little less and what worlds away,"

but I fancy he was writing of love and not pyorrhea.

Speaking of love, how some of you men seem to love the prosaic practice of dentistry. How you have banded yourselves together in small societies for mutual improvement, how you have instituted true study-clubs,—a philosophical idea now being carried forward in the east. The future character of our profession is to be made, or unmade, in the local society and the *small meeting*. The great big conventions are truly inspiring but you cannot get the best in a paper or receive the full value of clinical instruction amid an atmosphere of baby-foods and mouth-washes, while in the next room there would seem to be, to judge by the sound, a gathering of anarchists in a boiler-shop. This is not a criticism, it is a reminiscence. There is a proper place for the subsidiary exhibits and a fitting place for a scientific, professional meeting and they should be independent of each other, and yet how can they be independent when the long-suffering exhibitor often pays the freight and the complacent society allows him to do it? When we show ourselves capable of conducting independent meetings we can, with more grace, talk of establishing so-called independent journals.

Our professional journals are the literary highways of dentistry and in their pages, month after month, the practitioner of the east and west who does not care to wander from his own fireside and prefers to lead a gliding, solitary and silent life, may have at least a bowing acquaintance with his more strenuous brethren who say and do things. But one cannot get everything from the magazines, particularly if we are so busy that we rarely read them. You need personal contact for, as Confucius said, a single talk across a table with a great man is better than ten years' study from books. This has been the great advantage that your club has had; you have been close to a wise man, have been curious to learn and never satisfied and that is the whole story of progress in dentistry or anything else. You have not been content to stand upon the shoulders of a great man, making him a weary Sindbad, but you have held up his hands and encouraged him while he gave forth his laws of system and exactness. You have not declared yourselves for easy methods or short-cuts or makeshifts. You have enthusiastically stood for that which, after careful study and preparation, you consider the best and you have spared neither yourselves nor your patients when you felt it was necessary, to accomplish that end.

You have studied the subject in a scientific manner and then accomplished the result like true artists. It is sometimes interesting to consider how earnest men following an entirely different profession look at these matters. In referring to Gustave Flaubert, that consummate master of the French language, Walter Pater, that equally exquisite writer of English, speaks of "his lifelong contention against facile poetry, facile art—art facile and flimsy; and what constitutes the true artist is not the slowness or quickness of the process, but the absolute success of the result."

The practice of operative dentistry is hard enough, the Lord knows, and we should welcome any legitimate help we can get and to judge by your program this club is willing and anxious to try new ideas; but in this present era of talk about the discarding of gold pluggers and the exclusive adoption of labor-saving appliances, this growing dependence on the adhesive qualities of cement rather than on systematic cavity preparation, it is well that some men should contend against the widespread teaching of any methods, which however valuable they may seem when carried out with the tried skill and judgment of experienced dentists may prove to be unreliable when too readily adopted by young practitioners whose successes and failures are still before them.

I have been told that there is a chastening value in the mere accomplishment of difficult work. Latin and Greek are still required in a few colleges for their supposed intellectual discipline. That remarkable invention, the typewriter, has not entirely driven the teaching of handwriting from our schools. The marvelous pianola and phonograph can but attempt to interpret and not supplant the Paderewski and Caruso.

No matter how much we may increase the theoretical knowledge of the student; no matter how far-reaching we may make his scientific grasp of the problems of his work; when all is said and done, this culture of his intelligence must practically express itself through his hands. In the days of his youth, at least, the student should have to depend upon them, for few men are born practical dentists and we should see that the others are not spoilt in the making. Let us hope that with a knowledge of scientific principles the future dentist may know exactly what to do and that with the comprehension of the value of systematic technique he may be able to do it exactly.

This is what I understand to be the purpose behind the great work you are doing through this western country, the influence of which is being felt in the east and even in Europe. In doing this you will carry out the true principles of Western Dental Philosophy and you will continue to be worthy of the mighty man whose name you have the honor to carry on your banners.

WESTERN DENTAL PHILOSOPHY.*

BY DR. E. S. BARNES, SEATTLE, WASH.

When Dr. Wedelstaedt asked me to write a paper to be presented at this time, I doubted his judgment, but he had been duly warned, for last year I told him not to ask me to do anything he didn't want me to, for I would try my best if he did.

I ran a good deal of risk in naming this paper, for I named it before it was written, and prenatal christenings are sometimes difficult of postnatal application.

But it would seem that we all have our story to tell; we may not name it right, but it's our story. The Alaskan Indian holds most sacred his totem pole, reminding him at a glance the story of his race; the native of the eastern desert seems impelled to tell his story in fantastic design and enduring colors. The pianist tells his story best through the medium of his chosen instrument, using it as an interpreter to his earnest listeners, of a story he may not speak; the harpist would seem to pick from out God's own atmosphere, and transmit to us the visions he sees but cannot tell; the violinist seems to draw from his ever willing instrument the story that thrills us through and through; the poet, the orator, the singer, the painter, all with a genius that seems to be the connecting link between the unrest of the present and the repose of the future, the discord of earth for the harmony of heaven, seek to tell us their story.

So it may be after all our profession was christened before it was born and was wrongly named, and we are not practicing dentistry, but simply telling our story. Maybe some of our points are not clear and in perfect contact, some of our proximal spaces are obliterated, and the story may be a little ragged around the margin, but it's our story—our life work.

In the telling of this story it sometimes seems that mediocrity is the most difficult thing to contend with, and it used to seem to me my life would be spent in reaching for things I apparently could not reach, or what was worse, quit reaching and spend my time in self-regret and disapprobation. But on looking into this matter there is abundant reason for hope and encouragement. True, we are lost in admiration and give unstinted praise to the rich diapason of the rich basso who draws from the cavernous depths a song of exceeding richness; and to the gifted soprano whose range of sweetness is far too great for average human attainment, but music would soon be a forgotten art if left to those rare individuals to whom God has entrusted these exceptional talents. These are beacons along the road, not the road. And right here, some years since a prima donna won the applaud and admiration of a vast portion of her audiences with the rendition and interpretation of her vocal classics, but she won all the hearts of her audiences by her encore, which was "Home, Sweet Home." And "Home, Sweet Home" is written in the middle register and requires no great range and possibilities.

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*Read before the G. V. Black Dental Club, St. Paul, Minn., February, 1908.

And I sometimes wonder if we do not miss the great opportunities of this middle register in our practice. For while we applaud and admire the great manipulative ability of the expert gold worker, whose fillings add lustre to our profession and mean restoration, comfort and utility to our patients, amalgam, in the middle register of filling materials, is not only neglected but the most abused.

In the examination of 487 amalgam fillings but eight showed any signs of ever having been polished. And for fear you might think this a local condition, I will add that a big majority of these fillings had been made east of the Missouri and Mississippi rivers.

You all remember what happened to the man who buried his one talent. So I think there is a great service to be rendered in the matter of amalgam fillings, but the hope does not end here. The great improvement in my own work, through the inspiration of one visit to your splendid society, plus a little personal effort, leads me to hope that the things I thought were not for me or my patients are a possibility. And right here let me whisper low, my gold fillings, after a year's service, looked better to me than my gold inlays, and I am not a novice with the gold inlays either. I know full well it takes nerve to say anything that may ever so lightly intimate anything derogatory to so frenzied a fad. I know full well the vast field there is for the gold inlay, but when it comes to throwing away my pluggers, mine are right where I can reach them and few are the days when they are not used. But this paper is supposed to be philosophy, not operative dentistry.

And there is one thing that I want to philosophize on, and that is the young man in dentistry. There is great need of some system being adopted whereby the young man's sense of professionalism will be more indelibly stamped upon him. There seems to be an idea that the lectures in our schools along this line are simply to fill up the time, when those of us who have been in practice and given these things a little thought and study know that this is the great need of our profession. One thing I would like to say to the teachers here, not presumptuously, but if possible to impress it as it never was before, drive home to your classes the urgent necessity of their getting into our society work the instant they have their diplomas.

In our city we have to lie in wait for the average newcomer and get him into our city club. Teachers of dentistry, this should not be. Do you ever stop to think what these societies mean to you? I sometimes think they are my church. Anyhow, there is more good fellowship and more practical religion in them than in some of our modern churches.

Seventy-five per cent of our profession should be active in society work. Gentlemen, if this were so a Miller would not have to go to Germany; a Black would not have to be earning his livelihood and purchasing his own apparatus to prosecute his scientific investigations. For the dentists of this country are numerically and financially able to equip and support, as it should be, an institute for scientific dental research.

We are practicing a great profession and it is worthy of the best we have to give to it. We sometimes are up against the objection that we are not as great as the medical profession. Gentlemen, no profession was ever any greater than the man who practiced it. We are called "tooth carpenters," that's not bad; did you ever stop to think of the great architect whose designs we are studying and trying to fulfill? Thanks for the suggestion, for I am proud to be associated with so great a builder, and prouder still if I can build well.

At home I like to wander down to the water front or to some point of vantage on one of our many hills, after the mist has rolled away, and looking across that beautiful inland sea, Puget Sound, to its western shore, over the wooded foothills to the Olympics, whose snowcapped minarets carries one's view till it is lost in the clouds which they pierce. And then to watch one of those sunsets—we don't try to describe these things, we gaze, drink in their great beauty, and thank God we are alive.

So at times I like to roll back, in my mind's eye, some of the mists that obscure our vision and drink in the beauties that lie in the possibilities the service that our profession may render our fellowman.

SHALL IT BE A GOLD FOIL FILLING OR A GOLD INLAY, WHICH?*

BY DR. C. E. WOODBURY, COUNCIL BLUFFS, IOWA.

In the beginning of this discussion let us consider the several advantages and disadvantages of both the gold foil filling and the gold inlay so that we may be able to arrive more definitely at their relative degrees of usefulness.

The gold foil filling is the old time tried, much abused and little understood method of saving teeth. It was one of the first methods to be used in modern times and very little improvement was made by the average practitioner in the technic of its manipulation from that time until within the last decade. It is very true that in the meantime the cohesive properties of gold had been discovered, but it is a serious question whether an operator who does not produce with cohesive gold a density of over eight or ten specific gravity would not have saved more teeth by the use of non-cohesive foil as used fifty years ago by our forefathers. But within the last twenty years G. V. Black and E. K. Wedelstaedt have come from the darkness like the prophets of old to teach us the gospel of proper methods of operative procedure. And in discussing the merits of gold inlays and gold foil fillings, we will consider only those fillings that are made by the methods that they have taught us. I believe that any other filling, be it amalgam filling, a cement filling, a gold or a porcelain inlay, is better in all cases than a poorly made gold filling, which seems to me to be the worst operation ever perpetrated upon an unsuspecting public. But with the methods now in use by the members of the G. V. Black Dental Club and others a man may start an operation with the absolute knowledge that he can hermetically seal a cavity with a filling dense enough and strong enough for all practical purposes, and with the least possible loss of tooth substance compatible with a permanent operation. This in my mind is a very important consideration. Gold inlays, as they are made today by any of the various methods, are, in the hands of careful operators, such good tooth savers that they may be considered to make permanent operations. They have, however, several undesirable qualities which must place them in a position of being indicated only where such gold foil fillings are contra-indicated.

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From time to time in taking up new methods we must not lose sight of the fact that certain fundamental principles underlie all operations for the restoration of lost tooth substance. Extension for prevention as well as anchorage in the occlusal or incisal surfaces are just as important issues, when applied to gold or porcelain inlays, as when considering gold foil fillings. The foundation, as it were, from which a cavity for a gold inlay must be made, is the gingival wall. This wall must be extended at its buccal and lingual angles quite close to the angles of the tooth and root-wise under the free margin of the gum so as to include within the cavity that most susceptible area of tooth structure where recurrence of decay is more likely to occur than on any other part of the tooth. This extension is just as important where we are going to use a gold inlay as for a gold foil filling, as there is nothing about the inlay, or the cement joint, which will bring about a condition of immunity at these very vulnerable points. Taking, then, this gingival wall extended to the angles of the tooth as a foundation, the cavity in the occlusal surface of the tooth must be so shaped that the inlay may be withdrawn and replaced. This necessitates very radical cutting away of the occlusal portion of the tooth, which is entirely unnecessary when making gold foil fillings, and which in my opinion we are not justified in doing unless conditions contra-indicate a gold foil filling. I have seen many articles in which the writers asserted that it required less preparation of the cavity for an inlay than for a filling. But in all cases you will find that they have left unprotected by the filling the most vulnerable portion of the tooth, viz., the gingivo buccal and gingivo lingual regions.

An inlay, from the beginning until it is cemented into the cavity, is subject to accidents which may or may not be discernible before it is set and the margins finished. A little fault in the burnishing of the matrix, a slight distortion in its withdrawal from the cavity, a slight warping or a little gold on the cavity side of the matrix, a slight distortion of the wax model, either when removing it from the cavity or when attaching it to the sprue wire, a small imperfection in the cavity side of the investment, a failure to cast perfectly sharp at the margins, any of these things may occur and not be noticeable until after the inlay has been set and the margins finished, when it is too late to correct the fault. These are things which we do not have to contend with where making a gold foil filling.

And there is the cement joint. Our chemists and microscopists tell us that all cements are porous to a greater or less extent, that there is a molecular movement in the cement for from three to ten days after it has been mixed. Our sense of smell tells us that cements become impregnated by organic substances which decompose. Our clinical experience tells us that certain cement fillings surprise us by their lasting qualities and other cement fillings surprise us by the rapidity with which they waste away. I have in my experience with inlays, covering about ten years, seen good inlays become faulty. I have seen the conditions surrounding poor inlays become no worse after years of service. I have seen the cement wash out from the joint on an occlusal surface and not on the proximal surface of the same inlay. Taking everything into consideration we must come to the conclusion that we can never be certain what cement of a given mix in a given mouth will do until it has been tried, and if it is then a success we may not be able to duplicate the results a second time. I have seen and heard statements made regarding inlays which have been in service fifteen or twenty years, but that does not prove anything. We have all seen cement fillings that have done the same thing and gold fillings that have stood forty or fifty years. These are held up as a shining monument and we take no account of the immense number that have failed. The question is, what will the average be? I can confidently say that my observation tells me that the average life of a gold foil filling made by proper methods in a correctly prepared cavity will be much greater than the average of the best gold inlays.

There are, however, certain conditions which are necessary that will enable us to make a gold foil filling that will be permanent. To four of these conditions I wish to call your especial attention:

First. The patient must be of a reasonable age.

We must take into consideration the state of development of the tooth upon which we are to operate. Unless we are positive that the apical portion of the tooth is well developed we are not justified in making a gold foil operation of any considerable size in that tooth. As the jagged end of an undeveloped root, no matter if the tooth be held as firmly as possible with a separator, will occasionally lacerate the tissues to an extent sufficient to endanger the life of the pulp, a thing always to be avoided in a young patient. The age of the patient is not always sufficient indication of the development of the teeth. The whole general development must be considered, as many 12-year-old children are so far developed that it is safe to make large restorations with gold foil for them, while for others who have reached fifteen or sixteen years of age, such operations would not be safe. Therefore, if the roots of the teeth do not appear to be well developed do not make a gold foil filling. Make a gold inlay or an amalgam filling.

Second. The cavity must be so located that every part of it may be made accessible.

In many instances accessibility must be the guide whether we are to make a gold foil filling or an inlay, and it is something in which the personal equation enters very largely. Cavities that are accessible to one operator are not so to another, and as a man's skill increases he will find himself making operations in locations which would have been impossible for him to make a year or two before. The size of the opening of the mouth, the flexibility of the lips and the position of the teeth in the jaw are all things that must be considered. If the cavity can not be made so that every part of it may be reached and the correct line of force applied to the gold foil, while condensing the filling, do not make a filling, make an inlay.

Third: The tooth must have a reasonably healthy peridental membrane.

Large fillings, demanding the use of cohesive gold, should never be made in teeth which have been attacked by interstitial gingivitis, pyorrhea or any kindred trouble. It requires forty 10-pound blows of a mallet, accompanied by 15 pounds hand pressure to each blow, to properly condense 1/32 of a sheet of cohesive gold or 36,000 pounds pressure to the sheet. An ordinary filling in a bicuspid or molar, which involves the proximal and occlusal surfaces, will often require four or five sheets of cohesive foil, necessitating the application of approximately 150,000 pounds of force for its proper condensation. A healthy peridental membrane is well able to stand this stress, but it would be a very unwise procedure to subject an unhealthy peridental membrane to a force which would endanger the vitality of the tooth. We must consider that an unhealthy peridental membrane is a condition that contraindicates a gold foil filling but indicates a gold inlay.

Fourth. The cavity walls must be supported by sufficient dentine so that they will withstand the pressure that is necessary to properly condense cohesive gold.

It is those cases where there has been a considerable loss of tooth substance that the inlay reaches its greatest usefulness. In the hands of the careful operator it saves many teeth from that very useful but undesirable operation, a gold crown, which carries with it the constant menace of infection and inflammation in the gingival regions. In these days a tooth must indeed be in a serious condition to require a crown. Very extensive operations may be made both with gold and porcelain inlays which will restore the tooth to a condition of normality and leave the gingival regions in the best possible environment. How often do we see a bicuspid with the buccal wall so undermined by the backward action of the acid of decay as to be without appreciable strength, while the lingual wall is strong and well supported by sound dentine? By the use of an inlay we are able to save a large part of such frail walls and make an operation that will be a credit to ourselves and a joy to the patient. This is only one of the many places where it would be impractical to make a gold foil filling, but it is a condition where an inlay can be made to do good service for many years.

Another place where inlays are especially indicated is in cavities proximating bridge work over which it is impossible to stretch the rubber dam. The adjacent parts may generally be packed with cotton rolls or napkins so that a fair degree of dryness may be maintained long enough to see the cavity preparation and set the inlay. And while I believe dryness to be absolutely essential, both for preparing the cavity and while setting the inlay, we must occasionally do the best we can with conditions as they are presented.

Now what conclusions do we draw from these various propositions? First: That if we have a cavity which can be made accessible, the walls of which are reasonably strong, the peridental membrane in a healthy condition, the patient of normal health and nervous development, make a gold foil filling, for the reason that we may be sure of every step of the operation from beginning to end. That we may make an operation which will be more permanent than any other, an operation that will sacrifice less tooth substance than any other, an operation that any person in ordinary health will endure without undue fatigue. This will include from 60 to 75 per cent of the cases which present themselves to us with cavities in the proximo occlusal surfaces of bicuspids and molars.

Second: That the inlay should be used as an auxiliary to the gold foil filling because there is an element of danger in its construction and because there as an unnecessary sacrifice of tooth structure. But mind you this only applies to gold foil fillings that are properly made. A poorly made inlay is much superior to a poorly made gold filling. There is no reason why any man of ordinary ability should not be able to make gold foil fillings, as there is nothing about the technic that is too difficult to be overcome by proper application. A person must not expect to learn how to make good fillings in a year. Neither must a person expect to learn how to make good inlays in a year. The technic of one is as difficult as the other, and the prevailing belief that the cement joint of an inlay will cover slovenly work is a mistake which will be followed by failure. The same painstaking care must be used in the cavity preparation, the making, the setting and the finishing of the inlay as is used in the making and finishing of a gold foil filling, provided that we expect to attain the same degree of perfection in our operations.

CERTAIN PHASES OF OUR PROFESSIONAL DUTY.*

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

At the fiftieth anniversary of the Northern Ohio Dental Society, which was held at Cleveland in June, 1907, I read a paper on "Some of the Advances in Dentistry in the Past Fifty Years." Among other advances I mentioned the subject of Orthodontia, and in the discussion of the paper Dr. H. A. Smith, of Cincinnati, than whom there is no more conscientious or lovable man in the dental profession, departed a little from the subject matter of the paper to say that in the practice of orthodontia a distinction in methods might be desirable whereby in the case of a child of poor parents extraction of certain teeth could be resorted to, thus simplifying the operation of regulating and saving expense, while if the child was rich the arches could be expanded and the case managed along the lines of the most approved and modern ideas of orthodontia. In justification of this procedure he cited the late Dr. Atkinson's remark that some people may wear silk while others must content themselves with calico, leading the inference that this distinction between the rich and the poor applied to dental operations the same as to dress goods. I could not find myself in sympathy with such a sentiment, and besides I feared that Dr. Smith's personal attitude would be misunderstood, so in closing the discussion I took occasion to deplore the fact that Dr. Atkinson had ever used such an expression in connection with professional service, and also to say that I considered it a serious matter to extract a tooth for a child, whether rich or poor, merely as a matter of expediency.

It seems that I said this with an unwarranted degree of fervor, which called down on my defenseless head a very bright and witty paper by my good friend Dr. C. M. Wright of Cincinnati, at the December, 1907, meeting of the Ohio State Dental Society. Dr. Wright takes the ground that while it is a very beautiful theory to treat the rich and poor alike in professional service, and while it makes an inspiring theme for the enthusiastic orator to spread his wings upon, yet in actual practice a sensible man will use due discrimination and try to make the character of his service conform in a reasonable measure to the purse of his patient.

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*Read before the G. V. Black Club, St. Paul, Minn., February, 1908.

Well, let us see. Since this question has been raised it may be well to enter into a somewhat careful consideration of what a practitioner's real duty is in the attitude he assumes to his patients both rich and poor on this important matter. Let me state in the beginning that I am not advocating indiscriminate charity in dental service for any class of people. More than this, I am not a believer in much of the so-called charity that is administered today. I believe it is doing more harm than good by fostering pauperism, and creating incompetents in our midst. But I cannot detach myself from the idea that there is something different in the relationship which should exist between the professional man and his patient and that which exists between the shop-keeper and his customer, and I still deplore the use of the terms "silk and calico" as illustrating distinctions in the character of professional service.

Is it right to extract the tooth of a poor boy just because he is poor? Remember I am not speaking of any other operation except extraction, and I fear that in Cleveland, rising as I did on the impulse of the moment, I failed to make myself sufficiently clear. From a somewhat close clinical study of the conditions in very many mouths, I have grown to be quite strongly opposed to the thoughtless extraction of any permanent tooth. I see so much havoc written in the dental arches by the disarrangement of occlusion and articulation often from the extraction of a single tooth that I cannot think lightly of this operation. In fact in the attempt to regulate teeth where financial considerations have not entered into the matter at all it has frequently happened that the extraction of teeth with the best of intentions has resulted most disastrously. I know that this is true because it has occurred in my own practice where I have unwisely thought to relieve the pressure on the arches by the extraction of a tooth, and have left a condition worse than the first without any relief of pressure.

A mistake of this kind is a really serious matter and a conscientious man who makes it once will never again extract a tooth without due deliberation whether the patient be rich or poor. This is entirely a different procedure from inserting a filling material which is not expensive through motives of economy to the patient. I am not Quixotic enough to claim that dentists should unswervingly do the most expensive work for patients who cannot afford to pay for it. But I do think even then that dentists should strive to save the teeth of all those patients who are really anxious to have them saved—if need be with the less expensive materials. A tooth filled temporarily has the option later on of being filled permanently, but a tooth once extracted is irretrievably lost. This makes a very clear distinction between the practice of filling teeth with inexpensive materials and that of extracting permanent teeth as a supposedly short cut to their regulation.

What then shall be our attitude toward a child with irregular teeth and with poor parents? No one realizes the difficulty of this situation more than I, nor do I believe any set rule of conduct can be formulated. It must be decided in each individual case according to the conditions and the conscience of the practitioner. I can hardly have the courage or the conviction to ask of the profession to do for these children what I did for many years when I was accepting cases of orthodontia. I never yet turned away a patient from my office on account of fees where there was an earnest desire on the parents' part to have the teeth regulated, and I have in several instances carried through quite extensive cases of regulating without any fee at all. This I now believe to have been wrong—both in principle and in practice. It is demoralizing to any individual to accept something for nothing, and the man who fosters such a thing is guilty of an injustice to society. There are few parents today so very poor that they cannot pay something for such service, and the work will be more appreciated if it involves some expense. A perfectly frank understanding should accordingly be had with the parent to the effect that there must be a mutual sacrifice, and I am convinced that in the end every conscientious practitioner will be better pleased with himself if he carries through a case of that kind on the most approved principles even though his fee is not large.

The great trouble with this entire question of compensation is that too many professional men fail to develop early in their career that perfect understanding and complete confidence between practitioner and patient which is really the keystone in the arch of professional harmony and goodwill. When a patient knows that a dentist is honest and capable, and has in his makeup that essential element to all perfect success—the milk of human kindness—there is little difficulty concerning the regulation of fees, provided the patient really wishes the dentist's services.

I do not expect the millenium very soon but I do hope for the dental profession that kind of advancement along the line of equity and justice which shall impel them in their treatment of patients to invariably apply the golden rule. This seems so simple a thing to suggest and yet it is apparently so difficult to have put into practice. In its ultimate application it is always a personal matter, and each man should settle it on the basis of his highest understanding, and his most exalted charity. Not that he shall slave himself to death doing hard and exacting work for a mere pittance. It is not necessary. There are always exceptions but the great mass of the people will gladly pay for dental service when they are properly educated to its value. Please do not tell me that the people of this fair land are as a class too poor to pay for having their teeth attended to. We are surely not such a poverty-stricken nation as that. It is simply a matter of educating them as to the value of dental service, and be it said, the surest way of doing this is to so perform the operations we do that they demonstrate their value by their permanence. When a man points to a molar which fifteen or twenty years before had begun to give him trouble but which after a couple of visits to the dentist has remained comfortable and serviceable ever since he is a pretty good evangelist for dentistry, and there is usually little trouble in convincing him that his children's teeth should have careful attention and that the service should be adequately paid for. There is more dentistry being done today in this Northwest than ever before and for higher remuneration. Why? Chiefly because better dentistry is being done.

I grow so enthusiastic when I think of the present development of the profession that I would for the moment, if I could, close my eyes to some of the discouraging features which still have a tendency to hold us in bondage. I would fain forget the four dollar crown, placed on a tooth that has no need of a crown, of the cotton left in pulp canals as an easy way of filling them, or large masses of decalcified dentine utilized as the treacherous foundation of an amalgam or even of a gold filling.

But I am getting somewhat afield from the specific subject of my paper, which is to instil into the minds and hearts of the members of the profession the principle that in the practice of dentistry we are assuming a different obligation to the people we serve than if we were selling those same people silk and calico. A poor boy may be clothed in cheap raiment and be none the worse provided it keeps out the cold in winter, but if a permanent tooth is extracted from this same boy it may cripple his masticating apparatus for life. And please remember this one thing, that the social and financial status of people are continually changing, and the poor boy of today often becomes the rich man of a few years hence. This is particularly true in our own country where the opportunities for advancement are unlimited. When the man has ascended in the social scale and assumed the privileges and prerogatives of wealth and culture he may well laugh, and usually does, at the memory of the home spun apparel of his boyhood days, but if his teeth have been ruthlessly slaughtered through motives of expediency he never sits down at his well-laden table without a pang of regret at the needless sacrifice which handicaps his enjoyment of every meal. And there are numberless men in this very position today.

Shall we as a profession ignore this fact and allow the influence of a few dollars to dominate our method of practice in these cases? I am of course not speaking of the very many instances where teeth are lost without any appeal to the dentist, where they are neglected through ignorance till they are hopeless and where the inevitable has already occurred. These cases are happily growing fewer in number, but they will always exist to a degree, and we cannot be entirely held accountable for them.

But we need a rule of conduct for these cases which do come under our observation, and this rule should be dictated by the highest sense of professional honor and an earnest devotion to the best interests of the patient. May I venture before this body of earnest workers to formulate such a rule—one which of necessity must be general in its provisions and yet applicable to every case which is presented. I would respectfully submit the following: No professional man shall allow financial considerations to influence him to do an operation which may work a permanent or irreparable injury to the patient.

This rule carried out to the letter, and backed up by the spirit of loving kindness which should permeate all professional effort, will develop a delightful sentiment between practitioner and patient, and I am yet to be convinced that it will in the end leave the practitioner any poorer either in spirit or in purse.

CARIES AS A SOURCE OF INFECTION.*

BY GEO. W. COOK, D. D. S., CHICAGO.

About a decade ago I presented some investigations on the bacteriology of decayed human teeth. From that time up to the present I have studied and observed with interest a number of phenomena that are striking, in that they furnish an extensive field for further investigation. I had devoted about three years prior to the time above referred to to investigating the possibilities of tissue beyond the apical ends of the roots of teeth becoming infected by some of the more pathogenic forms of bacteria, especially those of tuberculosis and actinomycosis. On following up these distinctive pathological conditions I have isolated, and studied with some care, a large number of bacteria found in and around the tissues of tooth substance. I have also followed up my observations on the possibilities of the cervical lymphatic glands becoming infected from badly broken down tooth substance.

These observations have been verified, both from a clinical and experimental standpoint, by others. I have also added to the list of cases. At that time I reported a number of well defined cases of infection. I am better prepared at this time to state that the observations then made were founded on correct bases.

That infection of a tubercular nature can pass through the pulp canal of teeth into the surrounding tissues, far beyond the seat of entrance, is a fact beyond any question. When I say pass through the pulp canals of teeth, I do not wish to be understood as saying that these micro-organisms will pass through the healthy pulp tissue, but that they will pass through after the pulp has been completely disintegrated. This has been demonstrated.

The morphological changes that must of necessity take place in certain forms of bacteria in the mouth make it extremely difficult to determine always by microscopic slide examination the true bacterial forms there exhibited. Therefore, in most cases we injected, or inoculated, animals with the products from these root canals and tissues around the teeth. There is one thing that was striking in the cases where a microscopic finding revealed a tubercular bacilli in which there had been a considerable mass of putrefying pulp tissue, that the bacilli of tuberculosis seldom gave a positive pathogenic effect. This fact seemed to reveal a question of considerable interest, and that is, will the tubercular bacilli remain constantly virulent in the presence of putrefactive processes of animal tissue? This question might also be applied to many other bacteria. However, the presence of putrefying mass could have but little influence upon the strictly pus-producing micro-organisms of the human mouth. Their environments in such a condition seem to have but little effect upon their virulent properties, for it has been found that the staphylococcus in putrefactive processes would produce an acute inflammation and pus formation in animals without any reference to where they had previously been located.

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*Read before the Odontological Society of Chicago, March 10, 1908.

In this connection I might say that the pus-producing organisms found in carious teeth, or in the putrefactive processes of the pulp tissue, under strictly aerobic conditions, maintain their virulent properties with almost constant regularity. In the decomposition of the pulp, under anaerobic conditions, they, to an extent, are changed morphologically and sometimes pathologically. However, if they have a living tissue from which to draw their oxygen they are much more liable to maintain their virulency almost to a constant degree.

One of the peculiarities that seems to exist, with reference to the bacteria of the human mouth, is that they are peculiarly symbiotic; in other words, they can live in constant relation with each other producing various processes of fermentation and decomposition of tissue, apparently producing these various processes as if there was but one micro-organism present. There is one peculiar process that is hard to harmonize with the facts in certain processes and that is, oftentimes we will find a tooth broken down and caries reaching the pulp and the pulp has decomposed. We often speak of this as a putrescent pulp, when as a matter of fact putrefaction does not take place to but a slight degree in the presence of the free oxygen of the air. In such cases I have found the pulp to contain a number of bacteria, some which might cause putrefaction, some fermentation, and some capable of producing pathological changes in living tissue. In such cases the bacteria present will cause tissue changes, to the extent that we may have but slight degeneration of the tissues, as, for instance, in blind abscesses around the apical ends of roots of teeth, until there has been considerable loss of tissue. A large pocket may be the result without there being any very active inflammatory process. On the other hand, such processes may not terminate into pus formation at all. But in the formation of cystic sacs around the roots of the teeth, the serous product may be of such a nature as to act on the bacterial cell and cause its complete destruction without there having been any particular disease process, other than that of a cystic or a degenerative change that goes on from the changed functional activity of the tissue cells, as they appear in such pathological processes.

We find constant only a few distinctive forms of bacteria of the teeth in badly carious conditions and in the destruction of the pulp tissue, while investigations show the presence of many others that may be intruders in these territories, any one of which may be capable of producing pathological conditions if permitted to enter the living tissue. The tubercular bacilli and the ray-fungus are apparently capable of passing through the decomposing masses of the pulp tissue and successfully reaching a place where they either will be taken up by the lymphatic system or reaching the tissue surrounding and producing their peculiar pathological processes.

In a paper published in The Dental Review (April, 1901) on Actinomycosis, I there showed that some of these ray-fungi were capable of living a non-pathogenic parasitic life for a period almost indefinite; in other words, I found in a badly decayed and broken down tooth a ray-fungus which had all the characteristics in morphological appearance of the typical forms. I kept this case under observation for more than a year, to find the ray-fungi down in the pulp canals, and never so far as my observation went did they produce any of the characteristic pathological lesions. Beresteneff classified the ray-fungus into a saprophyte or non-pathogenic and parasite or pathogenic ray-fungus. At the time my former observations were made I was of the opinion that this was rather uncertain, inasmuch as the ray-fungus, as I have studied its peculiarities, seldom, if ever, really established a saprophytic process. While to an extent they can live in dead tissue, they will seldom, if at all, produce what we at the present time understand as putrefactive processes. But this question interests us but little in this connection.

In a case of actinomycosis that came under my observation in 1903-1904, I determined the fact that the ray-fungus has many peculiarities when it is subjected to the oral secretions and permitted to remain there for a considerable time. They will very seldom grow in the saliva of the human mouth as the branching thread forms, as they do on the ordinary artificial culture media, but they will in the majority of cases grow in long thread forms and break up into comparative short rods. In a culture media made by taking the salivary glands of the bovine and chopping the gland tissue up and expressing out all the fluid, after adding distilled water to the mass and making agar-agar from the solution, this organism grows only in the branching threads without producing the characteristic club ends. When it is grown in this media for some time and transferred back to the human saliva it grows only as short threads and rod-form.

This observation is sufficient to justify our statement formerly made—that the ray-fungus' natural habitat is not that of the human oral cavity. Of course from the cases reported in the previous paper, infection from the ray-fungus is usually brought to the oral cavity from the hay or grass fields, barley, or wheat straw; for it has been shown that the transferring of this organism from diseased cattle to other animals of the same specie is not attended with any great success.

In the discussion of the tubercular bacilli in connection with such processes we are not able to obtain such accurate data as in the case of the ray-fungus, for the simple reason that the ray-fungus can be cultivated artificially more easily than a tubercular bacilli.

My object in presenting this paper at this time is to state that after ten years of study upon these problems I am more than ever convinced that my early observations were correct. I have, since reporting the former cases, added three more cases of tubercular gland infection with surrounding tissue, that are directly traceable to badly broken down decayed teeth, with two cases of actinomycosis. One of these tubercular infections was such a marked and interesting case that I should like to speak of some of the peculiarities that I there found: A woman 37 years of age, who had been operated upon by the general surgeon for the removal of the cervical glands on the right side of the neck. Several operations had been performed before she came under my observation. She had two badly broken down molar teeth on the right side, with the pulp canals open to the apex and with a fistula discharging on the buccal surface near the roots of one of the teeth. These roots were removed, and scrapings taken from the pocket were inoculated into guinea pigs and rabbits. These animals showed sings of tuberculosis in a comparatively short period; the nodulated tissue at the point of inoculation was removed and the examination showed the presence of the tubercular bacilli. The roots of the other tooth were removed and a thorough curetting of the pockets and tissues was made. She then returned to the general surgeon who removed more cervical glands along the border and angle of the jaw, and the case made a very successful recovery.

Since we recognize that bacteria are the principal exciting causes of disease and produce many of the pathological lesions that are manifested in the morbid changes of the tissues, we cannot fail to see the importance of a closer and more minute study of special bacteria that are intruders in the oral cavity. But it also leads us to the importance of more minutely studying the bacteria that are hibitual inhabitants of the mouth, and especially those that are so intimately connected with the diseases of the teeth and surrounding tissue. Since we are forced by the strong circumstantial evidence to believe that bacteria play an important role in decay of teeth, and are always present in a carious and broken down tooth, it indicates at once that we have closely allied with the mouth and the digestive tract a great source of infection. From the history of individual cases we are able to follow closely the artificial cultivation of bacteria and by inoculating animals with these various forms removed from carious dentine and pulp canals we may demonstrate many bacteria that are extreme exciters of diseased tissue.

The presence of the staphylococcus and streptococcus are frequently met with in such localities as we have mentioned. And since we look upon these micro-organic unicellular organisms as taking an active part in inflammation and suppuration, it is important that these organisms should be studied with a great deal of care. Since my early bacteriological study of the organisms of the human mouth, and the diseased tissues that are so frequently present in the oral cavity, I have on a number of occasions found these organisms almost incapable of exciting inflammatory processes after their removal from decayed teeth. After inoculating them into animals with varying results of pathogenic properties, it leads one into the realms of comparatively the unknowable. It is difficult to determine the kind and class of culture media that are required to render these organisms non-virulent, or by growing them slowly that they are capable of maintaining their virulent properties.

It has been shown by a number of investigators that the streptococcus brevis is quite commonly observed in the oral cavity. This particular form is supposed, under ordinary circumstances, to be quite free from pathogenic properties when inserted in the tissue, although it has under some circumstances produced marked inflammatory processes. It can also take part in the formation of acids. There has been isolated from carious teeth about nine different forms of bacteria, any one of which is capable of breaking up carbohydrate compounds and forming acids.

A very interesting fact I have observed in studying the inoculation of animals from carious teeth is, that only in a few instances did we fail to have response from the animals, showing direct effects of the virulency of the organisms introduced into them. It has not always been an easy matter to recover these organisms from the animal bodies after inoculation and incubation. There seems to be formed many times in the animal, after inoculation, an antitoxin or some substances that destroys the bacterial cell. But if these bacteria are introduced directly from the teeth into the animal body the animal invariably responds to the inoculation, and sometimes with such severity that it causes acute septicemia that terminates fatally. This brings to our notice an important point and that is, an instrument used in the excavation of carious cavities should never be allowed, if possible, to enter the tissues around the teeth or the hand of the operator. If such a condition should occur the operator should at once take the necessary precaution to disinfect the part. This also illustrates another important point and that is, that artificial cultivation of bacteria from carious teeth invariably means the lessening of the virulency of these bacteria. Of course, it would be quite impossible for me, with the limited observations of cultivating the tubercular bacilli in and around carious teeth, to say whether or not this organism would have a more pathogenic property than it would under ordinary circumstances.

The observations that I have made lead me to consider that the bacteria that are constantly present in badly decayed teeth are of an extreme virulent nature; especially is that true of the bacillus dentalis, the streptococcus and staphylococcus. When I have cultivated these organisms in a bouillon media made from the salivary glands of animals, they invariably show a greater virulency than they do when cultivated in ordinary culture media. In a number of instances animals, in which inoculations were made directly from decayed teeth, would devolep more acute forms of inflammation and would run a more fatal course in the animals than they did in either the common ordinary culture media or the specially prepared culture media, as above mentioned. As I have just said, we should be aware of the infectious nature of bacteria in carious dentine.

In carrying on some of the experimental work, above referred to, I have, on a great number of occasions, attempted to determine, as far as possible, what agent could be introduced as a disinfectant in the cases in which the infection had been introduced. Among a large number of agents that are classed as antiseptics and disinfectants I have come to look upon chinosol as first in the list to be introduced into the tissues, if accidental inoculation should occur. Trikresol (at the present called phenól), is the next agent in efficiency. But it is important that these agents should be introduced immediately or as soon as possible after the accidental inoculation.

It should be the practice of every dentist when excavating or working around a carious tooth, to repeat a number of times applying a disinfectant to the cavity during the operation. I might say that the most efficient remedies for application in the cavities of teeth are iodine and chloroform, because they are splendid agents for disinfecting and they will penetrate carious dentine further than any other agent. In the use of iodine in carious cavities a 10 or 15 per cent solution of potassium hydrate should be applied and then with a solution of ammonia water the cavity can be thoroughly sterilized and the discoloration removed. Then should the operator's instrument accidentally injure the soft tissues there will be no possible harm follow of an infectious nature. If these general rules are followed, it will save the possible acute or inflammatory conditions being established that would result in a permanently infected condition of the gum tissue.

This same practice should be carried out before clamps and ligatures are placed on carious teeth.

The general suggestions that are made here are the results covering about thirteen years of bacteriological study of general infection of the tissue and the observations of bacterial findings in certain carious teeth. I have attempted here to show only the general side of a few factors that enter into and become a part of our daily practice. A study of the more minute problems that enter into the bacteriology of the human mouth cannot of necessity interest the general practitioner, and, therefore, I have discussed this subject only in a general way. This month is the thirteenth aniversary of my study of bacteriology, in a systematic and scientific way, of the micro-organisms of the human mouth. During these thirteen years there have been seven weeks in which I have not made cultures and microscopic examinations of the bacteriology and the tissues that enter into the oral cavity and come strictly in the field of dental surgery. And with all of these weeks and months, with a systematic study of the literature that is directly associated with this work, I am more than ever convinced that the pathology of dental caries, erosion and pyorrhea alveolaris have just crept into scientific importance. And the great subject has only been touched upon.

PERSONAL EXPERIENCE.

BY DR. L. P. HASKELL.

Dental practice is flooded with theories, some proved correct but practically of no account, others never proved but still urged.

Personal experience, however, is very potent sometimes in the settlement of so-called theories.

A personal experience of twelve years in the use of a full lower denture has very forcibly revealed to me some things not otherwise attainable.

One problem of the dentist is the excessive absorption of the lower jaw until, in my own case, there is but four-sixteenths of an inch of bone left in the region of the first molars. In addition to this, there is often a flexible condition of membrane over a considerable portion of the jaw. A plate constructed for such a jaw, I care not what the impression is, will not prove at once comfortable, when the pressure of the muscles is brought to bear upon it. There will be irritation at various points that must be relieved, for it is impossible to masticate otherwise. In such cases it will be weeks before perfect comfort and usefulness is acquired.

I say that no dentist who has not had this personal experience in his own mouth has any idea of what patients often have to contend with and too much effort cannot be spared to inform the patient of what they may have to experience and to impress upon them the necessity of going to the dentist for relief at once in case of irritation.

Why there should be such excessive absorption of the lower jaw I never have been able to understand. It proceeds regardless of what material is worn upon it, in fact when no plate has been worn after the loss of the posterior teeth.

In these cases there needs to be restoration where the process is lost in order to restore the contour of the lips. This makes a long bite, which necessarily increases leverage in mastication, making the plate more difficult to use for a time.

In this class of cases it must be borne in mind that although there may be some depression on the lingual side of the jaw, the plate cannot be worn below the margin at all, because it will be lifted not only by the muscles, but by a mass of glands and loose membrane. Even laying the end of my finger firmly a very little over the margin upon lifting the tongue the finger is displaced.

It is just here that many patients are enduring unnecessary annoyance because the dentist has thoughtlessly extended the plate below the margin.

For many years I recommended the use of cast metal plates. The second plate I made for myself was one of them. After having them in for a short time I went into the laboratory and leaned forward to speak to a student and the denture slid forward, because on this flat jaw there was nothing to resist the weight. That night, when lying down, it slid into the cheek, so I had no further use for it.

Of course, if there is a ridge to straddle that trouble would not occur, but my experience has fully demonstrated to me that a vulcanite plate is just as good upon any lower jaw as any thing that is worn, and that weight is not a necessity in any case.

I have found that a flange on each side is an advantage in that the cheeks hold the plate down and keep it from moving forward.

In relieving the irritated spot, although it is readily seen, it is not always easy to locate it on the plate. Take a little moist whiting on a spatula and touch the spot, and upon replacing the plate it is readily seen.

Where the posterior teeth have long been removed and a plate worn and later on the anterior teeth are removed and a full plate worn, as the anterior gums settle and the bite shortens at this point, the posterior teeth do not shorten, and under pressure there results irritation at the heel. The remedy is found in shortening the molars and not in filing the plate.

PROCEEDINGS OF SOCIETIES.

THE ANNUAL MIDWINTER CLINIC OF THE G. V. BLACK CLUB OF ST. PAUL, FEBRUARY 27 AND 28, 1908.

FIRST DAY.

REPORTS OF CLINICS.

DR. CHARLES MC MANUS, HARTFORD, CONN.

I have been asked to give, in a few words, my impression of the clinic *as a whole,* and it is this general effect of the whole clinic that is so remarkable. So many men doing so many different operations, but with such system, such a perfect understanding of exactly what they should do, that it is a great lesson.

The full cases of instruments in regular, perfect order, the trained assistants, the ever-present oil stone, which is of such value as a pain obtundant. The care with which each case is studied, the consultations as to the course to pursue, the cavity preparation according to the intelligent interpretation of scientific methods, the exact and rapid placing of the gold and the perfect form and finish given the completed operations. Of course there is an individuality in the various operations but as they are all based on exact studies the fillings when completed have, if I may use the term, a family resemblance.

The demonstrations of the application of the rubber-dam were of great interest—they should form a part of all clinics.

It speaks well for the broad character of this club, that at this clinic some very beautiful gold inlays were produced.

But it is impossible to *tell* of the clinic, one must be present and see the members all working together like good comrades, to realize what they are doing for the uplifting of scientific operative dentistry.

REPORT OF DR. SEARL'S CLINIC.

Dr. E. S. Barnes, Seattle, Wash.:

Dr. Searl made an operation in the mesio-occlusal surface of an upper right first molar. The linguo-buccal cusp presented a facet, showing evidence of considerable wear but careful examination could find no occluding surface which could possibly have occasioned this wear. So the conclusion was that this facet had been made some years earlier and the eruption of the bicuspids or molars on either side of it had changed its relationship to the occluding tooth. This feature of the case, however, demonstrated the importance of careful examination of conditions surrounding a tooth, in which an operation is to be made.

The outlines of the cavity were very quickly obtained. By means of chisels, the lingual and buccal margins were carried into accessible and immune areas. The occlusal step was opened up with a drill and extended with chisels. All the line and point angles were as nearly perfect right angles as could be made, the gingival wall perfectly flat and at right angles to perfectly flat axial, lingual and buccal walls, making ideal conditions for the placing of the noncohesive cylinders. Dr. Searl deserves all the credit he gets for the care he takes in the detail of his preparation. The gold was started by the use of half sheet cylinders of noncohesive gold placed on the gingival seat of the cavity after which cohesive pellets were started in the distal portion of the occlusal part of the cavity and worked mesially till it was condensed over the noncohesive gold. The condensing of the cohesive foil was all done with a five-tenths millimeter plugger. The finishing of the filling was accomplished with the Black saw, knives, strips and disks. And when finished you were glad you saw it. Contour, contact point, margins and interproximal spaces were all taken care of.

Time of preparation of cavity, 35 minutes; placing of gold, 45 minutes; finishing filling, 30 minutes.

CLINIC BY DR. F. S. JAMES.

DR. GEORGE T. WILLIAMS, Seattle, Wash.:

Dr. James prepared a cavity in the mesio-occlusal surface of an upper right first molar for the reception of a gold filling. This was accomplished thoroughly and expeditiously by the aid of just four different instruments, viz.: No. 2 bur which was used for opening through the sulci; two 15-10 R. & L. Wedelstaedt chisels with which the outline form was made, and a small hoe for securing the linguo-gingivo axial, and bucco-gingivo-axial angles. The gingival and pulpal walls were made perfectly flat, and at right angles to the buccal, lingual, axial and distal walls. The distance between the buccal and lingual walls at the gingival third being somewhat wider than at the occlusal. No pits were made. The margins were carried into immune areas, and to good finishing surfaces. The walls presented a good, smooth, solid appearance.

The filling was started with noncohesive gold, wedging two halves and two quarter sheets against the gingival wall between the buccal and lingual walls, which filled the cavity, after being condensed with a one mm. plugger, almost to the pulpo-axial angle. Four sheets of cohesive gold were required to complete the operation, a 5-10 mm. plugger being used throughout, commencing in the pulpo-disto-buccal and pulpo-disto lingual angles, laminating the gold from there onto that already placed in the gingival third. In condensing the gold a series of well-studied steps were always carried out, commencing about the center of the cavity and ending the thorough condensation against the margin.

The contact point was made a little buccal of the normal to meet that of a slightly rotated first bicuspid which had drifted distally to meet the tooth we are considering. A very narrow Keeber saw, with teeth presenting occlusally, was placed in the inter-proximal space, and the surplus gold cut off from the gingival margin to just above the contact point, the finishing being carried to completion with knives, disks and strips and bud finishing burs.

The contact point being deemed so precious, scarcely anything but the approximating tooth was permitted to touch it, and it touched hard. The finished product was a charm, and I hope to carry it in my mind as a future ideal.

I wish to thank Dr. James for his kindness in explaining so graciously the procedure as it was carried out.

DR. WRIGHT'S REPORT OF DR. GALLAGHER'S CLINIC.

I fear I cannot do the operations or the operator full justice, but will make an attempt.

The clinic on Thursday was made by Dr. Gallagher. The cavity was in the disto-occlusal surface of an upper right first bicuspid. The cavity formation was a beautiful one and the operation from start to finish showed great skill. Noncohesive gold was used in the gingival portion of the cavity and the filling completed with cohesive gold.

REPORT OF CLINIC BY DR. W. D. JAMES.

Dr. A. D. Black:

Dr. W. D. James placed a gold filling in the mesio-occlusal surface of an upper left first molar. This was not an ideal case for such a clinic on account of the fact that there was a cavity in the distal surface of the second bicuspid. This cavity was partially opened to give access to a cavity in the mesial surface of the first molar. The cavity preparation did not differ from the others, except in two particulars; that it was exceptionally broad bucco-lingually on account of extension of decay, and it was also necessary to cut farther to the gingival than is ordinarily necessary.

I wish to call particular attention to the gingival extension which Dr. James made, as it emphasizes a point that is frequently overlooked. After the rubber dam had been adjusted and the cavity was dry, some whitening of the enamel was seen along the gingival wall which had not been noticed in the previous preparation of the cavity. A narrow strip of the enamel had been partially penetrated to a considerable distance to the gingival of the gingival wall as prepared, and Dr. James very properly continued the extension to the gingival until all of this whitened enamel was removed.

In placing the gold, I noticed he was careful to have his direction of force at the proper angle in securing adaptation against the various walls. The entire filling was very well executed and the result was all that could be desired.

REPORT OF DR. CARLSON'S CLINIC.

By W. W. Wold:

Dr. Carlson's clinic was a gold filling in the disto-incisal surface of an upper left cuspid.

The cavity was prepared with a flat gingival wall carried well up under the margin of the gum and at right angles to the axial wall with a step in the linguo-incisal surface, also at right angles to the axial wall. The labial and lingual walls were also flat and as nearly at right angles with the axial wall as was possible. Retention was obtained by sharp angles where the labial, gingival and axial, and the linguo-gingival and axial surfaces met and also by a flat pit at the mesial end of the step extending pulpally at right angles to the pulpal base wall. The only corrections I found with the cavity preparation are: First, the disto-incisal angle of the labial wall seemed rather frail and I should have preferred to have rounded it off somewhat further to guard against fracturing it in malleting the gold and also to avoid the probability of the gold showing through labially.

Second, I should have extended the cavity past the disto-lingual angle, which I thought rather frail in the gingival third of the cavity where it should be very strong to withstand the pressure of the lower teeth. A separator was adjusted to secure the required space. The gold was built up in the proximal portion of the cavity level with the step, using small pellets and condensing thoroughly with a No. 1 plugger point. A pellet was now placed on the condensed gold extending over into the step and malleted first to the gold, gradually working toward the step another pellet slightly lapped this one and so on until the filling was securely locked into the step. The incisal part of the filling was now built up and the filling finished in the usual manner with files, knife, sandpaper disks and strips. Notwithstanding the abominable light at this chair, Dr. Carlson produced a very perfect and artistic filling.

REPORT OF DR. CLACK'S CLINIC.

By Dr. L. E. Richardson, Cedar Rapids, Iowa:

This clinic was the making of a gold filling in the mesio-occlusal surface of an upper right first molar. The rubber dam was adjusted and the cavity opened by the use of a chisel and mallet. On account of not having an engine, practically the whole formation of the cavity was prepared with the chisel. The cavity was formed with a step in the occlusal surface, the margins laid in immune areas, while the seat and step were made flat, and side walls at right angles to the seat. There were no undercuts of any kind, the operator evidently depending upon the spring and grip of the dentin, together with flat seats to retain his filling.

The gingival third of the cavity was filled by placing cylinders of noncohesive gold No. 4, made of one-half sheets of gold folded to length desired, then rolled into shape. These were laid flat on their sides, first in the angles, then in the middle; those on the sides were flattened against the side walls and those in the middle were condensed against the gingival seat and margin. The filling was then built up with cohesive pellets of the same gold, until the floor of the step was reached. At this stage of the operation the clinician cut a piece of paper the length and width necessary to cover the side walls and margins of the step, fitting it into the cavity in the shape of the letter U. This was used as a pattern from which a piece of No. 60 noncohesive foil was cut and this was held in place in the cavity, making a sort of box, into which cohesive pellets were malleted, the idea being to have an entire lining of noncohesive gold around the margin of the cavity. The filling was then completed, trimmed and polished, according to the well known methods taught by the Black Club and it made a beautiful operation with perfect margins and contact points. Eight and one-half sheets of gold were used.

DR. WEEK'S REPORT OF DR. MURRAY'S CLINIC.

Dr. Murray, of Minneapolis, made a cast gold inlay in the disto-occlusal surface of an upper right second molar, using the Taggart cast-inlay machine and the Taggart wax.

The cavity was very large and the decay deep. The cavity, when prepared, was of the well known step form. The lingual and buccal walls of the cavity were grooved with tapered fissure burs known as Peck's Inlay Burs.

The retention step was also very definitely grooved in the same direction and the entire cavity being prepared so that the wax would easily draw. The wax was softened in water heated to a temperature of 135° to 138° and then pressed firmly into the cavity, the margins carefully trimmed and adapted to the cavity margins. Wax was chilled, removed from cavity, mounted and invested, the sprue being placed in the proximal surface of the wax model. After investment was dried, the casting was made of pure gold, using the Taggart machine.

REPORT OF DR. WELLS' OPERATION.

Cast Richmond Crown, using Steele facing on an upper left central incisor.

The crown was removed to soft tissue, the remaining enamel removed and the root beveled at the margin. The canal was enlarged and dowel fitted, a seamless cap was swaged to the face of the root and the dowel was adjusted to the cap and soldered. A Steele facing was ground to proper occlusion and position. The facing was coated with vaseline and waxed to the cap and the position verified in the mouth. The wax was carved to the desired contour. The facing was then removed, the remaining parts moistened and then cast. The casting was polished, the facing replaced and the crown set.

CLINIC BY DR. BEEMER, OF MASON CITY, IOWA, REPORTED BY DR. CUDWORTH, MILWAUKEE.

Cast gold inlay in the mesio-occlusal surface of an upper right first bicuspid.

The cavity preparation was good. A broad flat seat at the gingival portion; the buccal and lingual walls well cut away; well beveled from the inner surface of the cavity toward the margin; a broad flat step in the occlusal surface with a pit sunk in that surface for lateral retention. The doctor went through the usual procedure of applying the rubber dam and obtaining a wax model of the filling, carving nearly to occlusion. Removed the rubber dam and allowed the patient to bite against the wax for perfection of occlusion. The model was then invested and inlay cast, finished and set with Ames brown inlay cement. The point of contact, margins and occlusion were all good.

SECOND DAY.

REPORT OF THE CLINIC AS A WHOLE BY DR. J. V. CONZETT, DUBUQUE, IOWA.

Mr. President and Members of the G. V. Black Club:

At each succeeding clinic of the club I have always said that this is the best meeting we have ever had, and again I make the same assertion, for I do believe that in many points this is the best meeting of the club that I have ever attended, and I have missed none for the last ten years or more. The essays were all of the very highest order and have stimulated us to better things along professional and ethical lines, and as we go home and read and study them, I believe that the sentiments expressed therein will grow upon us and develop us into more perfect men and better dentists. The clinics were the best I have ever seen and that is saying a great deal, for it is my privilege to attend a great many clinics all over this country. But in most clinics I see some one or more things that are all wrong. Operations made by men at clinics that would be a discredit to a freshman in one of our colleges, but here, I did not see one operation that was not a classic in its way. This is accounted for, of course, by the fact that the clinicians were all men trained in the Black methods, by the Black club under the vigilant eyes of Dr. Wedelstaedt himself. The one great impressive outstanding thing that especially impresses the man who for the first time visits this clinic is the uniformity in methods and results. Each cavity looks like every other cavity when it is prepared and each filling looks like every other filling when it is finished, showing that definite results are obtained by definite methods. The gold inlay was there in all its best dress, and with all its best machines and operators, from the great Taggart himself down to the last fellow on the market, and all seemingly very good. The inlays made certainly looked good, as the proof of the pudding is the chewing of the string, so the test of the inlay must be the test of time and use. Happily we have the opportunity of testing them now, and as we always "prove all things and hold fast to that which is good," we will soon know where to definitely place the gold inlays. The great event of the clinic, gentlemen, is the presence of the great men of dentistry. Dr. Black, the greatest dental scientist that has ever lived. Dr. Wedelstaedt, the greatest teacher with whom I have ever come in contact, and Dr. Johnson, the great author, teacher and gentleman. I do not believe that these men realize the tremendous influence that they are exerting. Not only is their influence felt by those with whom they come into direct contact, not only by those men that are influenced by those of us who draw our inspiration directly from these men, but by every patient in that incalculable army of men, women and children that submit themselves to the operations of the men who have been taught the Black methods, and they should all arise with us and call them blessed. We shall go from here inspired to do our best work and I believe, better prepared to fulfill our obligations to our patients, which with our heartfelt thanks must be the pay of the men who made this clinic possible.

REPORT OF DR. FINN'S CLINIC BY DR. E. S. BARNES, SEATTLE, WASH.

Dr. Finn's operation was the making of an amalgam filling in the disto-occlusal surface of a lower left second bicuspid. The feature of this operation was the care with which this cavity was formed with the exception of the bevelled margins as much care and skill was used in the preparation of this cavity as though it were for a gold filling, and I wish I were as successful in impressing upon you the value and importance of this operation as Dr. Finn was in making it. I am a friend of amalgam when handled in this manner and Dr. Finn rendered his patient a lasting service in this operation.

REPORT OF DR. CRANDALL'S CLINIC BY DR. G. A. RAWLINGS, OF BISMARK, N. D.

Dr. Crandall's clinic which was a gold filling in the disto-incisal surface of an upper right central incisor was an excellent demonstration of Dr. Black's method of cavity preparation. The enamel margins were carried to safe areas, and made absolutely strong. The form given the cavity for locking in the gold, was such as to give great strength to any filling.

The gold was condensed by stepping the plugger toward the margins. The contact point was right and the finished filling was proof of the skill of the operator.

REPORT OF DR. PHERRIN'S OPERATION BY MISS LOUISE BRIDGES.

Dr. Pherrin's operation was a gold filling in the disto-occlusal surface of an upper left second bicuspid. The adjoining first molar had been filled by Dr. James on the morning of the first day's clinic and there was no separation between the two teeth. Decay extended far over into the mesial surface of the tooth and considerable cutting was necessary. The cutting, to a large extent, was done with hand instrumentation. Dr. Pherrin prepared a flat seat in the gingival surface and cut the walls of the cavity at right angles to this. There was a longer beveled surface than is usually seen. Two half-sheet cylinders of non-cohesive gold were used and secured in place with another cylinder of half the size and the filling was then built up with the cohesive gold pellets. The proximal surface was condensed with one of Dr. Pherrin's own instruments, no surplus gold being removed with the Black saw. The occlusal surface was trimmed to form with stones and disks. The finished operation was certainly a credit to "one of the big men of the profession" although the conditions of the case were by no means ideal.

REPORT OF CLINIC OF DR. WALLACE BY DR. A. C. ROSENQUIST, ST. PETER, MINN.

Dr. Wallace made a gold filling in a cavity in the distal surface of an upper left central incisor, adjoining an overlapping lateral incisor. The salient features of the operation were: extension of the margins to a region where they were sound and would be free from lodgement of food, resulting in a triangular form with its base at the gingival and the apex toward the incisal. The marginal angles were slightly rounded but the internal angles were all sharp.

The seat formed a slightly acute angle with the pulpal wall and was a little convex linguo-labially. The incisal anchorage was a slight frit with grooves leading from it along the labial and lingual walls. The preparation was made almost entirely by chisels and excavators, that being my only criticism. This general form of the cavity could just as well have been made with the engine and burs and the finishing by hand instruments. Cohesive gold was used and thoroughly hand malleted throughout, using a small straight plugger. It was well contoured and smoothly finished, making a very beautiful operation.

DR. WRIGHT'S REPORT OF DR. YERKE'S CLINIC.

The operation of Dr. Yerke on Friday was a gold filling in the distal surface of the upper right central incisor. The cavity was prepared almost entirely with chisels and hoes. Dr. Yerke used the 12-5-6 obtuse hoe with the cutting edge ground to an angle of about 45° with the long axis of the handle, rights and lefts. He seemed to be able to define sharply the axial angles very easily with this form of instrument. The filling was made with cohesive foil and was carefully and perfectly made.

Both Dr. Gallagher and Dr. Yerke had the happy faculty of being able to explain clearly the different steps of their operation. The impression made on me was the perfection and system of the technic displayed by the operators. It showed years of application and practice. But the question came to my mind, is this method of practice which is so exacting on both the patient and the operator, one which will result in the greatest good to the greatest number? While the two operators referred to were considerate of their patients I saw several other operators who seemed to have no other thought than to do the operation and were unnecessarily rough with their patients. I also wondered if these same operators would submit to the same amount of punishment themselves which they inflicted on their patients.

Unless the operator himself was unusually robust and his patients unusually strong and capable of enduring the necessary strain it seems to me that the application of the principles and practice as demonstrated at this clinic would have a limited sphere in a busy practice.

CLINIC BY DR. J. W. S. GALLAGHER, REPORTED BY GEO. T. WILLIAMS, SEATTLE, WASH.

Mr. President and members of the G. V. Black Club: I am not able to report this clinic as fully in detail as I should like. After watching Dr. James so steadily all yesterday morning, I found myself today possessed with a desire for a hundred eyes, so that I might get a look at some of the other interesting clinics and demonstrations going on. I can truthfully tell you, however, *what* Dr. Gallagher did, but not exactly *how* he did it.

The cavity was in the mesio-occlusal surface of an upper right second bicuspid. The margins were extended to meet the demands of convenience which necessarily brought them into an immune area.

Last evening Dr. G. V. Black, in his lecture and exhibit on the "Pathology of Dental Caries," showed us a tooth specimen where a whitening had occurred, beyond a point where the cavity is ordinarily extended gingivally, caused by the acid of decay and explained to us the importance of cutting away structure so affected until we had passed entirely beyond it. Dr. Gallagher had a case of this kind and I noticed he very promptly followed our revered instructor's teaching.

The gingival third was filled with non-cohesive gold, the remainder with cohesive, using just two pluggers, viz.: 1 mm. and a 5-10 mm. I thought the pupal wall extended too much linguobuccally, but Dr. Gallagher explained that the stress was great and he did not care to cut deeper, so he obtained bulk of material for strength by the bucco-lingual extension.

The filling when completed was a most beautiful one, and contacted to meet a filling in the disto-occlusal surface of the first bicuspid, which Dr. Gallagher had made the day before.

A clean wide interproximal space, and if a fibre should ever pass through the contact point it cannot crowd against the gum septum, and I should like to make the prediction that there will never be any "soft tooth" around either of these fillings

I cannot allow the opportunity to slip by without thanking Dr. Wedelstaedt and members of the G. V. Black Club for their generous help and encouragement.

DR. C. H. ROBINSON'S CLINIC, REPORTED BY DR. F. S. ROBINSON.

Dr. C. H. Robinson, of Wabasha, Minn., made a gold filling in the distal surface of an upper right central incisor, the cavity not involving the disto-incisal angle.

The cavity was prepared according to the methods taught by Dr. Black. The margins were well extended to immune areas; the gingivo-labial margin required special consideration as there was also a cavity in the gingival portion of the labial surface. This margin was extended just far enough to be on self-cleansing surface. The idea being to leave a small portion of sound tooth structure between the two fillings but with their margins in immune territory.

The filling was made of cohesive gold, careful consideration was given to the lines of force, the stepping of the plugger.

The filling when finished was so contoured as to give a very small point of contact and a large interproximal space.

REPORT ON DR. WOODBURY'S CLINIC.

By Dr. L. E. Richardson, Cedar Rapids, Iowa:

Dr. Woodbury's operation was the making and setting of a cast-gold inlay in the disto-occlusal surface of an upper right first bicuspid. Dr. Woodbury first adjusted the rubbur dam, then opened the cavity with a fissure bur and with the use of bur and chisel formed a box-shaped cavity with a step in the occlusal surface as nearly on the Black lines as possible, cutting no undercuts. The buccal and lingual margins were shaped by use of a disk in the engine, with a long bevel but decided cavo surface angles. Some cement was used inside the cavity to fill undercuts caused by decay. When this had sufficiently hardened a celluloid matrix was adjusted and held in place by wedge of wood. The cavity was then moistened with distilled water and filled with softened inlay wax. This was carved to represent the gold inlay required, chilled and removed without distorting. The casting was done by Dr. Ridout in his centrifugal machine, using pure gold and when tried in the cavity fitted beautifully. The rubber dam was again adjusted, the cavity thoroughly dried with alcohol, then moistened with distilled water and partially dried and the inlay cemented to place with Ames' inlay cement. Before this had time to set, the inlay was forced to place and all cement possible forced out by heavy malleting and the margins thoroughly burnished. The cement was then allowed to set and when the inlay was polished it made a beautiful and, to my mind, permanent operation.

GENERAL REPORT OF THE ANNUAL MIDWINTER CLINIC OF THE G. V. BLACK DENTAL CLUB, OF ST. PAUL, MINN.

By Dr. E. K. Wedelstaedt:

Mr. President and Gentlemen:—And this is the day after, the next day. Well, we held a clinic the like of which, it seems to me, we have never held before. It is at present being continued in the next room where Dr. Barnes is operating before an interested audience under the supervision of that best of all demonstrators, Dr. A. C. Searl. For several days to come we shall continue the clinic unless we all of us play out from the fearful nervous strain and hard work of the past two days.

"A grand clinic it was." At least that is what Dr. Johnson said and as far as Dr. Black is concerned, well, his face said everything, although he spoke not. This was the best of all the clinics which you gentlemen have held. The attendance was greater than ever before and with the exception of the large crowd at Dr. Black's lecture, we had the smallest attendance at the literary part of the program of any of the many meetings which we have ever held. Should any future clinics be held, one of two things is necessary, either cut out exhibitors or have such an understanding with them as will lead to the closing of their displays while the essays are being read and discussed.

I am in favor of having every thing which is new and of value displayed by the manufacturers for the consideration of the men who attend our clinics and I have always taken greatest pleasure in calling attention to many new things which have been displayed. But when it comes to having the exhibitors give demonstrations and deliberately do some things which were done on Thursday and Friday, then I call a halt. Many of the men exhibiting did every thing to assist us toward having the men attend the meeting while others, well, I reckon they must belong to the four-footed race of animals that have bristles. This unfortunate action on the part of a few of the exhibitors was the only thing of a disagreeable nature that in any way tended to mar an otherwise most successful meeting.

If I attempted to speak of the many different features, the various interesting things, of the many courtesies extended, etc., etc., the entire issue of the DENTAL REVIEW would have to be given over to a report of our meeting. Such a report is not necessary.

The members and friends of the Club are greatly indebted to Mr. J. T. Ingersoll for the clinical arrangement of the room. Mr. David Perry went far out of his way to do every thing to help us. Towels, lamps, napkins, cotton, etc., were all in place fully two hours before they were needed.

To Dr. Wilson, our secretary, we all of us are greatly indebted for obtaining the patients for the clinicians as well as doing all kinds and classes of work to have the meeting more successful.

We all have reason to be proud of Dr. Carlson. He should have gone home and sought his bed—but no—sick as he was he made a most beautiful operation merely to fulfill his obligation to the Club as one of its members.

Personally, this has been the easiest of all clinics to manage for Dr. G. D. Moyer and Dr. A. C. Fawcett assisted me as I have not been assisted heretofore. Hereafter I shall need these two men for they carried out their part of the work in the most magnificent manner possible to imagine and as it was never carried out before. Other men assisted me also, in fact the *esprit de corps* was very, very noticeable, more so, I felt, than ever before. This is as it should be. Not only this but an unusually good fellowship was everywhere extant. Although there was a fearful crowd, everybody seemed to be in the best of spirits and good natured as well.

Fault there is to be found that the exhibitors kept their demonstrators at work throughout the entire day. The majority of men seemed to be more interested in these demonstrations than in the reading of the essays and the discussions which followed. Well, all I have to say on this subject is this: That those who missed hearing the essays missed the like of which we shall not soon hear again.

"Gee," as the boy said, those essays were a treat. That essay from that sturdy man, Dr. Barnes, of Seattle, was a poem. It was a literary gem, and then came that nice man, Dr. Chas. McManus, from Hartford, with another gem to add to the collection. Oh! what an essay it was and over half the men still in the clinic room and they missed something not soon to be forgotten.

And when darkness at last settled and clinics could not be carried on, they returned to hear what Dr. G. V. Black had to say.

It was an inspiration to merely look over that crowded room with its veritable sea of faces. How Dr. Black did talk and explain and throw picture after picture on the screen to not only prove the contentions, which for years he had been making, but to further interest us in being of greater worth to humanity by introducing a still greater degree of intelligence while making our operations. And when Dr. Black had finished we knew a master mind had given us his best and every member of the club knew that the greatest of all our clinics had been closed for that day by the greatest man in our profession.'

I wish to stop and discuss "The Complete Divorcing of Pathology from Dental Operations." I should like about an hour's time and three or four pages of this journal for that purpose. But I am discussing the clinic and goodness knows, in my already worn out condition, I have bitten off too much to chew with any degree of comfort. And the next day's session was, to use the expression of the street, a "corker." Yes! that is just what it was. Everybody was on the alert. The very air seemed surcharged with something which boded "nae guid" for somebody. It was a little difficult for some of the men to stem their impatience regarding what they wished to say.

In the discussions of the morning's clinics it began to blow. Before the report was half completed a storm of no mean proportions was right at hand. Then came that dearly loved man, Dr. Chas. E. Woodbury, with his essay, "Shall it be a Gold Foil Filling or a Gold Inlay"? When he had finished, well! the cyclone was on. Dr. Taggart gave us his side of the story as only the genial doctor is able to do. Dr. W. N. Murray, of Minneapolis, told us his side which just fitted into Dr. Taggart's. Dr. Cudworth and Dr. Owre also had many nice things to say in favor of cast gold inlays. Dr. G. V. Black, Dr. C. N. Johnson, Dr. E. S. Barnes, of Seattle, Dr. A. D. Black, and others all said some things which caused everybody to do some thinking. It remained, however, for Dr. A. M. Lewis, of Austin, Minn., to do perhaps the plainest talking which any of us has ever heard at a dental meeting. I'll not only take off my hat to Dr. Lewis, but I'll keep it off. He said his say in a way that must have convinced his hearers that his success with gold inlays was not that which some people lead others to believe could be obtained. The remarks of Dr. Lewis were clear, logical and so forcible that they left no doubts as to his convictions nor where he stood regarding this matter. Personally, I was surprised for Dr. Lewis has been using inlays for a longer time than any other member of the club and I had all along supposed he was still making much use of them. But in his practice it seems that the gold inlay is merely used as an auxiliary to the gold foil filling. Dr. G. V. Black at last poured oil on the troubled waters and peace once more reigned. The essay of Dr. Woodbury is just as clean cut as he is. It comes from an operator of experience, whose skill and ability, both as an all-round gold foil manipulator and the maker of most beautiful inlays, is not to be sneezed at. He knows what he is talking about.

At last came our friend, that strong man, Dr. C. N. Johnson, who always adds luster to any meeting where he takes part, be it dental or otherwise. His essay was one of those strong ones which go a long way toward solving some of the vexed questions that so often confront the busy practitioner.

Let Dr. Johnson's essay be carefully studied and much good will result to the one who does this.

Yes, it was a large and enthusiastic gathering of men who were interested in what was going on. Drs. Barnes and Williams came from the far west, Seattle. Dr. Chas. McManus came from the far east, Hartford. There were men from, it seemed to me, about everywhere between the points named.

There were men from Ohio, Missouri, Kansas, Illinois, Michigan, Wisconsin, Minnesota, Iowa, the Dakotas, Montana, Nebraska and I do not know where else. I'm tired. Even Dr. Bond, sick as he was and is, came to grace the occasion with his presence and were we not glad to see him?

It was a pleasure to see you all. We were glad to have you with us. We gave you the best which we could find and we hope that much good will result and that you are satisfied. It is necessary to speak of the operations and table clinics. A number of men reported these.

This action on their part was very nice and kind and I thank them for relieving me of some of the mass of work which necessarily piles up on the manager of the clinic.

THE OPERATIONS.

I do not feel called upon to say very much about the operations which you gentlemen made. Should I say anything it would be that the operations showed an improvement over those which were made at last year's clinic. This merely shows that you have spent much time in studying the detail of cavity preparation and considered more carefully those principles which relate to making more perfect fillings.

One thing I observed and that was the excellent cases presented for operations. Dr. F. S. Robinson had one of those "awful" ones and I felt sorry for him. But he handled it most successfully.

Dr. Wallace also had a mean case but from the way he went at it I felt certain that he had encountered many worse ones.

I should feel much better did I have several reports somewhat past due, and then you would know just how other men feel about all the operations which were made. But time waits for no man and the meeting is but a day away so, much as I need the reports, I shall have to complete my writing without including the rest of them.

It is necessary to speak of two things which I feel are very important. The position of our members toward the inlay and the interest displayed in the demonstrations given of the adjustment of the rubber dam. Some remarks were made to me individually and I overheard a number of men speaking in a complimentary way regarding your willingness to make demonstrations of the value of cast gold inlays. There has always been a desire to interest men in all things which were new and of value and which would in any way assist in prolonging the usefulness of the human teeth. It has not made any difference whether this meant using an inlay, an amalgam filling or any other thing. It is for this very reason that in the past Dr. J. O. Wells of Minneapolis and Dr. C. E. Woodbury of Council Bluffs, have attended our meetings and tried to interest others in the usefulness of inlays. The demonstrator of operative dentistry of this club has stated in his lectures that the cast gold inlay has come to stay and that each man should become familiar with its usefulness. Therefore some of you gentlemen demonstrated your method of using cast gold inlays.

If I am to judge from the crowd which surrounded the chair each time a demonstration was made of adjusting the rubber dam, then it may be well to hold a regular demonstration at each annual clinic. Unless an amphitheater is at hand the demonstration should be given in a room by itself and to about twenty men at a time. A clinic of this kind should be most interesting but it would be working any clinician doing this somewhat more than holding some other sort of a demonstration. But the demonstrator might change and a second man take his place. Such a clinic should be held each year and on both days of the meeting. You may consider this matter and report upon it at some other time.

FIRST DAY.

Report by Dr. Charles McManus of Hartford, Conn., "My Impressions of the Entire Clinic."

Dr. A. C. Searl, Owatonna, Minn.—Gold Filling.

Cavity-mesio occlusal surface-upper right first molar. Reported by Dr. E. S. Barnes of Seattle, Wash. (See Dr. Barnes' report.)

Dr. F. S. James, Winona, Minn.—Reported by Dr. George T. Williams of Seattle, Wash. (See Report of Dr. Williams.)

Dr. J. W. S. Gallagher, Winona, Minn.—Reported by Dr. P. B. Wright, Milwaukee, Wis. (See Dr. Wright's report.)

Dr. W. D. James, Tracy, Minn.—Reported by Dr. A. D. Black, Chicago, Ill. (See Dr. Black's report.)

Dr. K. E. Carlson, St. Paul, Minn.—Reported by Dr. W. W. Wold, Jackson, Minn. (See Dr. Wold's report.)

Dr. W. R. Clack, Clear Lake, La.—Reported by Dr. L. E. Richardson, Cedar Rapids, Iowa. (See Dr. Richardson's report.)

Dr. J. V. Conzett, Dubuque, Iowa.—Dr. Conzett made an operation with gold—the disto-occlusal surface of an upper left first bicuspid. I did not see the cavity preparation but I did manage to see other parts of it and the completed operation. I do not feel like saying anything about operations which are made by men in Dr. Conzett's class. From all appearances it was as beautiful as was possible for anybody to make it. The gold was most beautifully trimmed to form, the contact point most minute and everything about the operation seemed to be precisely as it should. (I wish the gentleman who was to report this clinic had sent it in on time and that would have helped me very much.)

Dr. W. H. K. Moyer, Little Falls, Minn.—(This is another case where some good man has failed to send me a report.)

Dr. Moyer's operation was a gold filling in the occlusal surface of an upper right first bicuspid. Luckily, I am very familiar with Dr. Moyer's ability, and besides this, I had a chance of seeing more or less of this operation. It was as perfect as the hand of man could make it. Dr. Moyer has protested against making operations in the occlusal surfaces. At the last half dozen clinics in this section of the country he has appeared and in the main has made fillings in the occlusal surfaces of molars and bicuspids. He wished to make operations in other classes of cavities but at my solicitation he has confined himself very largely to making gold fillings in the occlusal surfaces. I have requested Dr. Moyer to do this for the reason that I am constantly seeing teeth with amalgam fillings in the occlusal surfaces that could just as well have been filled with gold. The method which Dr. Moyer uses for making the filling is known as the combination method. Cylinders of non-cohesive gold are first stood around the walls of the cavity, condensing each cylinder as it is placed. When sufficient non-cohesive cylinders are placed and condensed the center of the cavity is filled with cohesive gold. Where this method is used very large cavities are filled with gold in ten or twelve minutes.

The operation which Dr. Moyer made was, when completed, as nice looking as any made at the clinic.

Personally I feel under obligations to Dr. Moyer for his willingness in demonstrating a method which he feels all have long since been following.

Dr. F. S. Robinson, Chippewa Falls, Wis.—An amalgam filling in the mesio-occlusal surface of an upper right first molar.

I have already made some reference to this case. The cavity was a very large one involving the mesio-buccal cusp. Dr. Robinson displayed most excellent judgment in removing the cusp half way to the gum line. His cavity preparation could not have been better and although I did not see the completed operation should I judge from the cavity preparation, it was certainly all which could be desired. I wish to compliment Dr. Robinson for his willingness to make such an operation at a public clinic.

Dr. W. N. Murray, Minneapolis, Minn.—Reported by Dr. E. B. Weeks, Litchfield, Minn. (See report of Dr. Weeks.)

I feel that it was very nice of Dr. Murray to give up two entire days and work as hard as he did for the success of our clinic and I thank him most sincerely for his kindness.

Dr. J. O. Wells, Minneapolis.

Dr. Wells, like Dr. Murray, is an unusually busy man but he also found time to spend two days at our clinic. He has been identified with the educational work ever since clinics have been carried on in this northwestern country and I feel very kindly toward him for all his hard work in trying to interest others in making better dental operations.

The short report which has been made regarding his clinic does not tell of the hard work which he did nor the painstaking care which he bestowed on the entire operation. The members of the Black club are under lasting obligations to Dr. Wells for all which he has done for us.

SECOND DAY'S OPERATIONS.

(Dr. J. V. Conzett makes a report of the entire clinic.—(See Dr. Conzett's report.)

Dr. William Finn, Cedar Rapids, Iowa.—Reported by Dr. E. S. Barnes, Seattle, Wash. (See Dr. Barnes' report.)

Dr. W. G. Crandall, Spencer, Iowa.—Reported by Dr. G. A. Rawlings, Bismarck, N. D. (See Dr. Rawlings' report.)

Dr. J. B. Pherrin, Central City, Iowa.—Reported by Miss Louise Bridges. (See Miss Bridges' report.)

Dr. J. F. Wallace, Canton, Mo.—Reported by Dr. A. C. Rosenquist, St. Peter, Minn. (See Dr. Rosenquist's report.)

Dr. K. E. Carlson, St. Paul, made a good filling in the disto-occlusal surface of an upper right first bicuspid when he should have been at home and in bed. At the meeting some gentleman gave a very nice report of this clinic and all that I can say about it is, the gentleman who made the report at the meeting, did not send me a written one, so it cannot be printed in the proceedings. Dr. Carlson is one of the most artistic men that there is in this part of the country and his operation was beyond question of a doubt, like those which he continues to make and they are all about as beautifully made as is possible to make them.

Dr. F. J. Yerke, Owatonna, Minn.—Reported by Dr. P. B. Wright, Milwaukee. (See Dr. Wright's report.)

Dr. F. S. James, Winona, Minn., made a gold filling in the mesio-occlusal surface of an upper left second bicuspid. All that is necessary to say of this operation is, it is similar to the operations which Dr. James made on the first day of the clinic. Dr. James is a man of great skill and ability in his profession. More than this it is not necessary to say.

Dr. J. W. S. Gallagher, Winona, Minn.—Reported by Dr. G. T. Williams, Seattle, Wash. (See Dr. Williams' report.)

Dr. C. H. Robinson, Wabasha, Minn.—Reported by Dr. F. S. Robinson, Chippewa Falls, Wis. (See Dr. Robinson's report.)

Dr. C. E. Woodbury, Council Bluffs, Iowa.—Cast Gold Inlay. Reported by Dr. L. E. Richardson, Cedar Rapids, Iowa. (See Dr. Richardson's report.)

Dr. G. N. Beemer, Mason City, Iowa.—Cast Gold Inlay—disto-occlusal surface of an upper right first bicuspid. The method of making cast gold inlays has been described so often that I do not feel called upon to say anything about it. Dr. Beemer is a man, like Dr. James, of greatest skill and ability in his profession. All that is necessary to say is, that the completed operation was like all operations which Dr. Beemer makes. (There is a whole lot more which should be said about the operations but I am completely written out and once again I find that my "thinker" is as greatly worn as am I myself. I am heartily ashamed of this report but it is this or nothing. I have no time in which to rewrite it.)

TABLE CLINICS.

Most certainly the greatest of all interest was centered in the Taggart casting machine. There were crowds of such proportions surrounding the men who were using casting machines of any kind that it was all but impossible to get within ten or more feet of the demonstrators. The Taggart machine surely received its share of attention.

There were all kinds and styles of inlay machines from the Taggart to the home-made bicycle pump one.

The last named one interested me. It was simplicity itself for instead of driving the gold into the flask by blowing on the gold, the molten gold was drawn into the flask. The Seattle men brought the last named machine with them and Dr. Barnes demonstrated the use of one of the most excellent little things I have seen in a long time. It was this: When the flask or crucible was hot a piece of borax is used around its margin. In doing this a tight joint is made which, when the pump is used, forces the air on the gold and draws it into the crucible just where it is desired. Dr. Williams, of Seattle, gave us a practical demonstration of the beautiful results which he obtained with this machine. He made a cast gold inlay for a cavity in the mesio-disto-occlusal surface of a lower left second molar. He cemented the inlay to place and Dr. Woodbury, the patient, and all of us, were greatly pleased with the results.

Herculean work was done by Dr. J. B. Ridout. From the time he began to demonstrate, and he did this on both days of the clinic, until Dame Nature asserted her rights and forced him to stop, he was surrounded by such a crowd that it was all but impossible for him to demonstrate. He made castings of flowers, he made castings of everything from rings and things to busts and cusps. I verily believe that if Dr. Ridout were at present in the clinic room he would still be surrounded by one hundred or more men. One thing I wish to do now and that is to most highly compliment Dr. Ridout as a demonstrator. No matter how greatly he is annoyed, no matter how great is the irritation and no matter what is done, the same good nature prevails. He cannot be ruffled in the least by anything which takes place. Even when the flask exploded he merely said, "That results when a man does things in a hurry. Now we shall have to begin all over again." That's all right, Dr. Ridout, but just the same a few of us knew what you thought.

Dr. Vernon demonstrated the use of acolite as an auxiliary to gold. This was a white casting metal. I do not know anything about it. I do know this, however, if one half which was said of acolite is true, and Dr. Vernon had fifty or sixty castings of it in every conceivable form from fillings to crowns and bridges, then I am able with both eyes closed to see the usefulness of this white casting metal.

It remained, as it usually does, for poor Dr. Johnson (C. N.), to about kill himself. He had a series of cast gold inlays in teeth with all classes of cavities. He talked until he was so hoarse that he could hardly speak and had he not stopped Mother Nature would have given him the same dose which was given Dr. Ridout. Dr. Johnson did everything to make the clinic a memorable one, assisting everywhere, in everything, demonstrating on both days and he returned time and again to me and asked, "Is there anything which I can do for you?" Many thanks of a sincere kind are due him for his cooperation and assistance.

Dr. R. G. Joslin, of Minneapolis, was very nice. He demonstrated various methods of using the Davis crown, interesting a large crowd of men in a number of new and very simple methods for doing this. Thank you, doctor, for all your hard work and assistance.

Dr. F. J. Yerke, of Owatonna, Minn., managed to get into the harness at an early hour and he remained until it seemed to me all were satisfied. He demonstrated a rapid method for casting cusps.

I am sure that Dr. F. B. Kremer, of Minneapolis, never before received a more hearty welcome than he did at our meeting. He also was one of the kind men for he went away out of the beaten path to try to interest everybody in making better dental operations. The first day Dr. Kremer displayed about five thousand crowns, bridges, teeth with fillings, etc., etc. There was food for reflection, assimilation and digestion, as Dr. Robinson so aptly puts it, amid the great collection displayed from Dr. Kremer's museum of failures.

On the second day methods for making castings of various kinds were very fully explained and the various steps were illustrated from models, castings, etc. I thank you, Dr. Kremer, for all your hard work and I trust you are not as worn out as some of the rest of us who were also busy.

And then came that modest but sturdy man, Dr. J. B. Pherrin, of Central City, Iowa, with casts containing lower third molars which he had extracted. I found him sitting at a table surrounded by an interested set of men to whom he was explaining the methods which he used in extracting these so often abnormally situated teeth.

He had a large number of casts. In each cast was the third molar, just as it was situated when the case came into his hands for treatment.

It may be well to again explain how these casts of conditions are obtained. It is simplicity itself. Before anything is done, a modeling compound impression is taken of the case; this is laid aside, the tooth extracted and then placed in its position in the impression. The impression, but not the tooth, is then vaselined and a plaster of paris cast made. When the cast is separated from the impression the cast should be an exact copy of the conditions as they existed prior to the operation.

I am free to confess that Dr. Pherrin is another of the men to whom I will not only take off my hat but continually keep it off. Not only is he an operator of greatest ability, but as an extractor of abnormally situated lower third molars he has few, if any, equals. He is a man whose interpretation of the advanced methods is unusually good as well. We are all proud of Dr. Pherrin for he was not even on our list of table clinicians, but he came and of his own free will, and unannounced, did everything to assist in making the clinic more successful.

And there was Dr. Wm. Finn, of Cedar Rapids, Iowa, with instruments, large wooden teeth with cavities of different kinds, which were in various surfaces, with clay and all else to interest anybody who wished to know anything about the operations which were being made. He also did his share and more too to interest all in the advanced teachings. Dr. Finn is a good man to do this very thing for he is up and doing and knows what's what. Thanks, doctor, for your assistance.

Then there was Dr. Searl, who went around doing all kinds of things to assist others as did Dr. Robinson, Dr. Wallace and so many others whom I cannot now remember. Thank you all, gentlemen, for your kind and cordial co-operation.

CONCLUSION.

For years we have held these annual midwinter clinics. Much has at times been done to discourage us from holding them and things of a nature have arisen that may as well be forgotten. The great success of this year's clinic, its far reaching effect, the amount of good done, the interest aroused, etc., etc., should compensate the members of the club for a great many other things which we have felt were not at all agreeable.

I supposed that the clinic which was held in 1907 was the last of the annual midwinter clinics. You gentlemen showed much wisdom in again holding an annual clinic for I feel great and lasting interest has been awakened which will result in much good being done.

It was the highest of all compliments to have Drs. Barnes & Williams of Seattle, Wash., Dr. Chas. McManus of Hartford, Conn., and Dr. J. F. Wallace of Canton, Mo., with us. I speak in particular of these gentlemen for it shows the extreme eastern, western and southern boundaries from which men came to our meeting.

It was an unusual compliment to have Drs. G. V. and A. D. Black, C. N. Johnson, W. H. Taggart, W. N. Murray, F. B. Kremer, J. B. Pherrin, W. G. Crandall, C. E. Woodbury, Wm. Finn, J. V. Conzett, J. O. Wells, R. G. Joslin and C. P. Peterson taking part with the members and lending every aid toward having the clinic so successful.

It is, gentlemen, a somewhat difficult matter for me to say to so busy a body of men, you were most kind to us, we feel so grateful and thank you most sincerely for your kindness and yet! that is all we have to offer you. We should like to give each of you one thousand dollars but our club is only a small body of men and the demands on our time are gerater than anybody knows. If you but realized how often our members are away from their practices, doing just what you have done for us, you would know that we are well aware of and appreciate very fully your kindness for we ourselves are always doing similar things for the members of other societies. We heartily thank you and hope that good will come to you all.

And now let me return thanks to the gentlemen who were so kind as to report the clinics. This act on their part was very nice, for it relieved me from some of the work so that I was free to spend the time in doing other things. Time and again the question was asked, "Will you hold a clinic next year? Please do, I have attended every annual clinic which you have held and I cannot afford to miss one." This and similar expressions were voiced by so many men that it surprised me.

For the present let us obtain a somewhat needed rest, next year will be here quickly enough and doubtless there is enough for us to attend to right now without our beginning to worry about another midwinter clinic.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held March 11, 1908, with Dr. Truman W. Brophy in the chair.

Dr. George W. Cook read a paper entitled, "Caries and Infection."

DISCUSSION.

Dr. E. J. Perry:

I know absolutely nothing about this subject, but I have listened to the essay with profound interest and I feel that the Society and the profession generally should be warmly congratulated upon the work that Dr. Cook has done. It only takes a few minutes to read such a paper, but it takes years and years of painstaking research to accomplish what he has done in Chicago in the matter of original research, and he is entitled to our gratitude, and I feel that it is a great honor to our Society that he reads his papers to us, as a rule, first.

As he read his paper the idea struck me that we were working around volcanos that were liable to erupt almost any time when digging into the carious cavity of a tooth, and the only wonder to me is that we do not do more harm than we do. I am quite sure, however, that we do do more harm than we think we do. I have had some little occasion to notice what this peculiar tubercle bacillus does, but I have learned, or at least I think I have learned, that the tubercle bacillus is rather a harmless bacillus unless associating with the pus-producing associates, the staphylococci, and more especially the streptococci, and that if the tubercle bacillus should by any means be pushed into the tissues of the apical space, he might do very little harm unless he gets his friend in there with him, namely, the streptococci, for, I understand, from German pathologists and pathologists in the Chicago Medical College, that in about 78 per cent of people upon whom post-mortem examinations have been made in a scientific and regular way, they have found tubercle bacilli, whether the patients died of tuberculosis or of any other disease. They have found that those bacilli were present, and I have learned that the so-called mixed infection of quick consumption occurs only when these germs become actively associated with the pus-producing microbes, so that it is possible that is the reason why we have not done more harm.

With regard to some of the alveolar abscesses with which we have to deal being tuberculous in their nature, possibly that is the reason why some of them are so violent and yield to treatment so slowly. in my own practice, from my earliest years of professional experience, it has been my habit to wipe out the cavity as soon as the rough excavating has been done, with carbolic acid. I have never done this from a purely scientific standpoint or from the standpoint stated by the essayist, but I have done it because it seemed to me a most excellent local anesthetic and I could excavate the cavity with less pain. That being my regular habit, I have had less infection, because I know it must be, judging from the standpoint of the essayist this evening, detrimental and extremely careless not to wipe out such a cavity. I have never used bicarbonate of soda as an antiseptic. I think, however, judging from the statements of those who are skillful in antiseptic surgery, that possibly the use of a warm saturated solution of bicarbonate of soda would be very effective as an antiseptic.

I regret exceedingly that I cannot discuss this paper scientifically. I would like, for the sake of my friend, the essayist, to have given it more study before coming here, as it is my duty, and as it is the duty of all of us when a paper is to be read. But as the essayist has said, it has taken him thirteen years to acquire the technic and knowledge which he has given us this evening, it would scarcely be expected of one who is not at all versed in bacteriology to take up the subject and be able to offer a scientific discussion of it. When I went to dental college, Mr. President, they did not know anything about this subject. They did not teach bacteriology. It was not mentioned and, consequently, I have no foundation upon which to build, and I would have to start in with the A, B, C's of the subject if I made any headway at all.

Dr. J. E. Hinkins:

I have been associated with Dr. Cook more or less ever since he entered the dental profession and even before that time. While I am not taking an active part in the bacteriological side of this subject to anything like the extent Dr. Cook has done, judging from the character of the work he has presented to us this evening, yet I am interested in this subject, and the paper he has presented to us tonight is worthy of the highest commendation. There are some points on which we differ a little because I do not class myself with Dr. Cook as a scientific worker in bacteriology. While Dr. Cook's work has been largely from a bacteriological standpoint, my work has been more from a chemical standpoint. The paper he has presented tonight I am unable to discuss intelligently, but from the work I have been trying to do, and in connection with some men who have been associated with me, the things that have been presented to us most forcibly have been the acid conditions, acid produced by bacteriological fermentation from artificial media and the acid produced from fermentation in the mouth from physiological conditions.

In trying to do physiological and biological chemical work we are confronted with many conditions which are not presented in the bacteriological laboratory. I cannot say that I agree with the position taken by some at the present time, that bacteria are the prime cause of infection in all cases. I believe bacteria are an adjunct instead of a prime cause, or an accessory. The problems that come before my confreres and myself—and Dr. Cook is familiar with most of our work—are, first, the osmatic action with which we have had to deal; the hydrolysis, the enzymes; catalysis, or catalytic action; electrolytic action; osmosis, and in the last year and a half we have dealt largely with acidosis. These are questions of vital importance to scientific investigators, and I have classed among them the amido group of acids. From what little we have done with bacteria along this line of work, we have found that, if we can keep the artificial cultures free from the hydrolytic action, catalytic action, osmotic action, or enzymotic action, they are not so active; but the minute they are brought together, each one of them tries to get ahead of the other to see how fast they can reproduce these conditions, and for that reason there is some question in the minds of chemists as to what brings about these bacteriological conditions; whether or not it is bacteria that bring them about, or whether or not it is the physiological chemical condition that accelerates the action of the bacteria, we know that certain things will produce a decided inhibitory action on certain bacteria, and we know that the same bacteria in similar cases and the same agents will not produce the same condition. There is some work being carried on at the present time with regard to testing and treating for acidosis and, at the same time, of keeping tabulated record of pathogenic conditions of bacteria in these cases, and wherever we have the greater amount or the greatest activity of catalysis and hydrolysis in these cases, we have the greatest activity in bacteria. Where these conditions are prohibited or inhibited, the bacteria are not so active. While I would like to discuss Dr. Cook's paper more intelligently, I am unable to do so from a bacteriological standpoint.

Dr. C. S. Case:

I really know very little about this subject. Dr. Perry in his opening remarks expressed my feelings perfectly. The profession ought to be very thankful and to be proud that we have a man like Dr. Cook who can devote so much time and so much work to these various problems which are going to be of such great advantage and benefit to the profession. I could not help but think, as he was reading his paper, of what Dr. Perry said, namely, that while it took very little time to read the paper, we hardly realize, particularly those of us, who have not gone into this work, how much time he has spent in studying and working out this subject, and how much untiring energy has been expended by him in carrying forward the work he has done along this line.

Dr. J. W. Wassall:

A worker and an investigator like Dr. Cook is a rare thing in any specialty, in any branch of human thought. I agree with Dr. Case perfectly that what Dr. Perry has said regarding Dr. Cook and his work expresses my own idea in very much better language than I could use. It is a most unusual thing to find a man who has the ability and the taste and the persistency to stick at this sort of work, amid the discouragements and distractions of modern life, as Dr. Cook has done, and I hope that he will live long to carry on this work, and that he can at the end of another thirteen years say, that he has only taken seven weeks off.

There are some practical points he brought out that are of considerable value to us. I should like to have him tell me just how he employs the chinosol, which I understand was used after accidental infection of the soft parts, because I understand that chinosol is an irritating agent. I was impressed, for the first time, with the danger of leaving infective and broken down roots in the mouth with canals untreated and unfilled. I have sanctioned the retention of these roots in the mouth when patients were reluctant to have them removed, and that has been, I believe, the practice of many others besides myself, but I now see a new danger in allowing them to remain. It has been my custom to say that they can stay until the patient wishes to have them removed or until they begin to cause disturbance. I can see that such roots, when left, are a constant menace, and that great danger attaches to their remaining.

It is rather surprising to know that the tubercle bacillus can find its way through a pulp canal into the apical space region and not form an area of infection there; that it will, so far as observation goes, only be absorbed and transferred to the neighboring glands and there do its work. While that is rather surprising to me, still the one case cited by Dr. Cook is conclusive that these bacteriæ can establish themselves through this route.

It was news to me to be told that there are nine well isolated acid producing germs, found in carious teeth.

On the whole, the paper was one that has impressed me more than any I have listened to for many years, and I am very glad indeed to have had the privilege of listening to it.

Dr. C. N. Johnson:

I want to add my tribute to those that have been given by the different speakers, and I expect to get more benefit from studying the paper in the future than I was able to obtain simply in the reading of it. It is true, as the speakers have said, that a paper of this kind, which is read in a few minutes, involves many years of labor, and to properly grasp its salient points, one needs longer study than we can give it in listening to it.

It was something of a surprise to know the possibility of tubercular infection in decayed roots, and I am very glad the essayist has brought this matter before us in the manner in which he has. We have known, of course, that actinomycosis was brought about by infection in this way, and the thing that impressed me most in the reading of the paper was the lesson it conveyed in the danger to our patients in leaving decayed teeth in the mouth. I believe that the function that dentistry performs for the people in putting the mouth in a hygienic condition is not yet fully recognized or appreciated either by the medical profession or even by the dentists themselves. I believe that when we take a mouth that is filled with decayed teeth and put that mouth in a hygienic condition, we have done something more than merely filled the teeth. We have affected that patient constitutionally most profoundly. That is my conviction, and the thing that impressed me most in the reading of the paper was the greater care we should take in keeping the mouths of our patients in a perfectly hygienic condition. It has long been known that conditions in the mouth are most favorable for the propagation of micro-organisms, but often aside from these conditions we have the receptacle of the decayed roots, and the poisons formed by the micro-organisms when they are allowed to work unmolested. As Dr. Wassall has said, I shall be more particular in the future in regard to recommending the extraction of teeth which are hopeless.

There is one thing I would like to have the essayist speak about when he closes the discussion, and that is in regard to the possibility of the dentist infecting himself by instruments. He spoke of the treatment of punctures when a dentist runs an instrument into his finger in the act of operating, but did not do so specifically. I would like to have him go a little more into detail as to how he would treat a case of that kind in which, for instance, a dentist runs an excavator, an exploring instrument, or something of that kind into his finger. I am constantly doing that, as I operate very rapidly. My practice is, however, to immediately express the blood out of the wound quite freely, and I have felt that was a safeguard in addition to subsequent treatment with antiseptics. We have impressed upon us all the time when operating the possibilities of virulent infection, from instruments, and I wish Dr. Cook, in his closing remarks, would outline in a brief way how he would treat a case of that kind.

Dr. E. R. Carpenter:

It has been said that consistency is a jewel. In regard to the essayist's work, that might be applied to him as a consistant investigator, and also I would add, persistency, thou art a gem. I am totally unable to add anything to this discussion from a purely scientific standpoint, but it has been my privilege within the last month to have an interesting case come into my practice, so that the paper of this evening opens up an entirely new vista, and I have sat here with a desire to hang my head at my own ignorance.

The patient in question was a little girl, 11 years of age, who came to me suffering with an intense toothache. There was a slight swelling in the region of the lower right first molar. Upon investigation I found a large disto-occlusal cavity filled with pink gutta percha which I removed. Upon flushing out the cavity, I found there was neither response to hot nor cold water, and after thoroughly drying and exploring with a fine point, I dropped into an exposure of the pulp. On opening that pulp I found an extreme case of putrescence. I applied a disinfectant and sealed it loosely in the cavity, using, as is always my custom, a hollow copper cap over my dressing, a temporary filling which would bear no pressure over the exposure. The patient was unable to tolerate that, and I removed it and again resorted to the same procedure, and it was allowed to stay in about forty-eight hours longer than the first dressing. Finally, the disturbance became so great that I was unable to leave any sealed dressing in there at all. The swelling gradually became larger, and upon digital examination I found a lump directly beneath the lower maxilla and underneath the roots of the first molar. The swelling kept on getting larger and larger and harder and harder, until I gave up all hope of doing anything for it. In the meantime I got a history of the child. The child was anemic, pale, and I found that she had had two operations for removal of tubercular glands, one on the left side of the neck, and another one in the forehead, and I made up my mind that inasmuch as anything I might do for the child would not give any relief, I had an X-ray picture made, and in looking over the skiagram I found pus extending along the distal root and along the right angle of the jaw forwards. In view of this skiagram and what it showed, the patient was put under gas by Dr. Allen and that area lanced, but there was not a bit of pus, only some dirty looking blood, escaped. The swelling kept on increasing in size until at the end of two weeks it was as hard as a hickory nut. I made up my mind it was a case for extraction. I called up the family physician, told him the conditions, and he agreed with me thoroughly. They wanted to have it opened externally, but I would not agree to that. The tooth was taken out and with its removal a large quantity of viscid pus followed. I sent the patient back to the surgeon who had previously operated, and I am to have a report tomorrow. But I believe here is a case where the tubercle bacilli were carried down through, and I believe there is a tubercular condition underneath there.*

The paper has sounded a sharp note of warning to us and it calls to my mind another case that one of my patients brought to me Saturday. Briefly, a report of the case is this: One of the superintendents of the Illinois Steel Company, located at Joliet, had been bothered, off and on, for some five or six months with an abscess of the upper first molar, and he had neglected it because he was busy. Finally he was taken down with the grip and the trouble ultimately settled right there and the man had blood poison and died within forty-eight hours. I simply mention this case to show the danger of delay in treatment.

Dr. W. V.-B. Ames:

I, too, wish to express my appreciation of the contribution which Dr. Cook has brought to us this evening. We certainly owe him a debt of gratitude for the work he has done along this line. I do not want to say more, except to thank him for having brought to my attention several years ago chinosol for the treatment and prevention of such infections as he has mentioned. One of the best results I ever saw was obtained from the use of this agent in a case when I was out in the hills. A young girl accidentally cut her thumb very badly with a broken bottle, the neck of the bottle having come off unexpectedly, and she received a bad gash in the thumb. The thumb was carelessly bandaged and she was allowed to go in that way for some time until a fungous growth began to form, and when I first saw her this fungous growth was pretty well advanced. Several things were suggested by various persons from a raw potato poultice to anything else they might happen to think of. I chanced to have some of this chinosol with me, made a compress and applied it directly over the wound, saturated with a rather weak solution of chinosol, and bandaged the thumb, and by the following day the entire appearance of that wound had changed. I watched it for a time and merely had the girl renew the outer dressing, leaving the first gauze immediately over the wound, which had attached itself. I simply moistened that each day with a weak solution, and when I last saw her, everything was going smoothly. If the thumb had been left to go as it was when I first saw it, or some nastly poultice had been applied, she would have had a badly deformed thumb.

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*The patient has since been operated upon and tubercular gland removed from below lower right first molar.

Some twenty years ago I stuck myself in the finger with an excavator one day. I did not think much about it at the time. I squeezed out what blood I could from it, but did not do it thoroughly. Within the next week or so I happened to be situated under unfavorable conditions of atmosphere. I was in a building which at that time was filled with sewer gas, and went to bed to have an operation performed. The whole circumstances was favorable to the infection of my arm, and as the result of the infection I carry a good-sized scar on my arm today.

I would like to ask Dr. Cook to tell us a little more about chinosol and what solution he finds most useful.

Dr. J. G. Reid:

I have expressed myself on various occasions regarding Dr. Cook's work. We ought to be thankful that somebody has courage enough to keep at this work so persistently as he does, for it is only by continually hammering at things that we get results, and unless someone is interested in such work, much of what is done is liable to go unnoticed and is not brought to our attention. If we stop to think of the suggestions that have been brought out, it is a practical paper, one that is useful in our practice, when we are so liable to be subjected to the injuries that have been referred to. I presume there is no one present who has not had a similar experience to the one mentioned by Dr. Ames. We have punctured ourselves by instruments many a time, and when we stop to think of it, it is remarkable that so many of us escape as well as we do. We have present a living example in a person who was laid up for several months after puncturing his finger, incapacitating him for work. I have been punctured with instruments many times myself, and it is my invariable custom to drop the instrument at once and grasp the injured member above the puncture and hold my finger in that position until it bleeds profusely. I get as much blood out of it as I can and possibly that is the best thing that can be done under the circumstances. The puncture of the tissues is the worst injury that can be sustained, and especially if it is a small wound, such as a very fine broach makes.

These teeth are all more or less infected when we are working on them, and to be punctured with one of these fine broaches is attended with danger, because within my own knowledge Dr. Swain, Dr. Royce, Dr. Noyes and a number of others have been laid up for weeks from an infectious broach puncturing the finger. We cannot be too careful in the use of instruments and the paper that has been read tonight ought to impress us more thoroughly than anything that we have listened to for a long time regarding those conditions which we are constantly and every day coming in conflict with. I feel under great obligations to Dr. Cook for this paper.

Dr. Truman W. Brophy:

This paper is extraordinary because it presents to us for consideration phases of bacteriology that have never been presented to any body of men before anywhere, so far as I know. I have traveled pretty well in this country and abroad and I have never heard a paper deal with the subjects that have been presented this evening in their various aspects.

The main thought the essayist has tried to bring out in no uncertain way is that the mouth is a center of infection. I have said before, and I repeat again, that the oral cavity is the greatest of all centers of infection, because through it we receive the pathogenic micro-organisms that establish all kinds of infectious diseases.

The position the essayist has taken regarding the ingress of tuberculosis in the way he described it is something new to me. Infection by actinomycosis is not new. He has pointed out that this disease, until within the last few months, I may say, has been regarded as incurable and as a fatal disease. It is received through the teeth and about the teeth, and there it manifests itself in the terrible forms we see it in practice. I have had within the last year or two two patients suffering from the ray fungus or actinomycosis, for these terms are synonymous, and both cases have been cured. I have just dismissed one patient as well, a girl, 17 years of age, who had actinomycosis. Her dentist from Texas brought her here suffering from actinomycosis brought on through the ingress of the ray fungus by the chewing of straws upon which the fungus develops in the same way that animals contract the disease, and if I am not mistaken, I explained to the members of the Society on a previous occasion what treatment was employed, and how it had its origin through the medium of an agricultural school where animals infected with this disease were successfully treated. The grains upon which the fungus developed were so treated that the fungi were destroyed and thus prevented them from growing on the new grain. All that is interesting, but we have not time to go into details. It is enough in itself to make a long and interesting paper bearing on this dreaded disease of so-called lumpy-jaw, or, more scientifically speaking, ray fungus or actinomycosis.

The essayist has entered into so many phases of bacteriology that I will not attempt to enumerate, much less would I discuss some of them. Some of them I do not know anything about, other than in a general way; but those which have to do decidedly with the development of disease in and about the jaws I have dealt with, not in the way the essayist has, by careful laboratory work, but from a clinical point of view. If I were able to spread the information among men everywhere who treat disease that we have received this evening from the most excellent work that Dr. Cook has done and so generously given to us, I would be glad to do it. There is no doubt in my mind that the medical profession has neglected more than anything else pertaining to disease such matters as we are discussing here, and if I could impress every medical teacher, every medical society, every medical man interested in the progress of his profession, and who is earnestly working for the benefit of humanity, with the importance of this subject, and the importance of impressing upon students the great scope and the great breadth of the pathology of the oral cavity and its influence upon general health and the necessity of men preparing to cope with such disease—if I could impress that upon men who are engaged in teaching, men who are engaged in medical and dental practice, I would be doing great work. But that must be a growth. That must be like building a house. We must first lay the foundation, as Dr. Cook has done, stone by stone, brick by brick, until the structure has advanced to its present state of completion. He has told us that he has devoted thirteen years to this work. I hope the builder may live many, many more years to go on with the erection of the magnificent structure he has built up to the present state, rounded out to the full, and make it so substantial to observe that all who seek knowledge of these subjects we are interested in for the sake of humanity may be benefited.

Dr. J. E. Hinkins:

Before the essayist closes the discussion, I would like to recite a case that came under my care. The only reason Dr. Cook was not called in consultation in this case was on account of the illness of his brother. The patient was a boy, 9 years of age, who was brought in to my office with an earache. I made a rather hurried examination at the time, as I was not feeling very well, and found that his temporary teeth were badly diseased, and I noticed there were two large cement fillings in the first permanent upper molars. I made an appointment for him two or three days later. In the meantime, he came down with an abscess of the ear. He was sent to one of our specialists in the city who is recognized as one of our leading medical men, and in the course of time the boy was taken to the hospital, and an operation or hole was made at the base of the ear for the removal of necrosed bone. Following the operation a drainage tube was inserted, and after three weeks in the hospital, he was brought home, and after he was home about four or five days, or a week, he had a decided swelling of the soft palate and the ear trouble broke out again. He suffered considerably, and a physician, who treated the case, said to me one day, "I wish you would go over and look at that boy with me and see what is the matter." I went to the house and found the little fellow in bed. I made an examination and found in the upper jaw abscesses in three of his temporary teeth, with one exposed pulp, and his mouth was in an absolutely filthy condition. I do not think his teeth had been cleansed since he had been sick. The soft palate had been lanced twice on either side and pus was flowing from it. On examination, the pulps of two permanent molars were dead, and I suggested to the doctor that the child be given an anesthetic, and the teeth extracted. I removed three temporary teeth, and the two permanent teeth. With the extraction of the teeth, there was a profuse flow of pus. I said to the doctor, let us gather some of this pus, examine it, and see what we can find, and much to our surprise we found, after testing for pus forming bacteria, and finding them abundantly, a number of tubercle bacilli in the field of the microscope. Strange as it may seem, since that time the little fellow has practically recovered. The abscessed ear has healed up, and the doctor has treated him for tubercular infection. He is up and walking around and was in my office this afternoon. The whole trouble in this case was doubtless due to tubercular infection, the teeth being the seat of the infection.

Dr. J. G. Reid:

While I was on my feet I had in mind to say that in those teeth where the pulps have died under cement fillings, or any other kind of fillings, I think the application can be readily understood when we think of the great amount of gas that is formed in the pulp canals, and how readily these germs can be forced into the tissues under such pressure—I say it becomes quite applicable when we refer to the casting of metals. The pressure of gas in the pulp chamber has been known to be so great that teeth have actually exploded under this pressure, and when you come to think of the formation of gases and the forcing of these materials into the tissues, it is no wonder that a great area of tissue can be infected in that way.

Dr. Cook (closing the discussion):

I am glad I have been able to do something that seems worthy of the commendation of the members. In order to discuss many phases of this question, it would take much more time than we have at our disposal this evening, and in my paper I did not go into the details of the subject. I simply tried to give you a few general points that might be of interest to any one who is at all familiar with the operations that are performed in the mouth. One of the important points I wanted to make was that many of these bacteria live so comfortably together and can perform so many functions apparently, one producing fermentation, another putrefaction and possibly another acting as a disease germ in living tissue. That phase of the subject has been very little discussed by leaders in pathology. It is presumed, and under ordinary circumstances, when we isolate these bacteria from decayed teeth or from the oral secretions, we get them in pure cultures, as it were, and in trying to bring about in animals the same process we find in the tissues, we are not always able to do it, and this is not surprising, because there are certain environments that are absent when we deal with them as pure cultures. But when we take them from the tissues direct and introduce them with their other associates, they perform certain conditions which they would not otherwise perform if they were alone.

Dr. Perry brought out an interesting point in regard to the action of the tubercle bacillus being practically *nil,* provided it is not associated with other micro-organisms that will assist it in performing certain of these properties. The tubercle bacillus is an organism about which very little is known, even by the best men. A great deal of work has been done on it with pure cultures, and investigators do not get the results many times they expected to get, and it is simply because this germ cannot always work alone. However, in predisposed tissues the tubercle bacillus is an organism that seems to have a special affinity for certain lymphoid tissue. If the tubercle bacillus is introduced into tissue like the tonsils or like the lymphatic glands, it will perform all these various functions alone. If you introduce it into the connective tissue or tissue that has a general activity like muscle, then its action is practically *nil* until some other organism assists it in that process.

Another point that I wanted to emphasize was the fact that these organisms directly removed from decayed teeth were much more pathogenic than if isolated and treated in the ordinary bacteriological way. The pus producing organisms, when they live for a certain length of time in decayed dentine, become of the highest possible efficiency in producing disease. If you consult the ordinary books on bacteriology, they will tell you that the streptococcus brevis, meaning the chain form of these organisms, and brevis meaning short chains, is non-pathogenic ordinarily treated. If you will isolate that same chain and cultivate it from a tooth artificially, you will find you have the streptococcus brevis, but if you will take the dentine of a tooth and place it in the culture media, you will produce a greater efficiency of pathogenic property, and it lengthens out the chains sometimes even to the extent of causing virulent forms of inflammation.

As to the infection of an operator by the use of his instruments, here comes in again the question of immunity of the tissues in which you have introduced the organism. If you have introduced the organisms into the finger, it is an active tissue, one that is always in use, and when that tissue is in use it has the greatest amount of immunity. Therefore, many times you are not infected for that reason, even though you do prick your finger with an instrument, because as soon as you injure your finger you grasp it and squeeze out all possible infection that is in there with the blood serum, and that is why I mention the introduction of an antiseptic into a wound, in order to be sure that the blood has been expressed out. Then, before it is really released, if the assistant will take a broach with some cotton wound around it and dip it in the chinosol, and follow up the opening as deeply as possible, you can nearly always prevent infection, and when I say "nearly always," you can practically do so in all cases. The introduction of the antiseptic is not solely with the hope of destroying the germ, but the principal thing is that when you release the tissue there is a suction of the blood; the return circulation draws back, as it were, the tissues and draws the micro-organisms into the tissue and possibly into the circulation. Then, when the micro-organisms get there, they can go almost any place that they want. If you introduce an antiseptic, it necessarily means that this agent will have a certain amount of corrosive action on the tissue.

A word or too in regard to chinosol. One of my pet things is to find agents that will act antiseptically, so far as possible, and I experiment with them to find out as near as I can under what circumstances they will act. Chinosol is a more or less empirical remedy, yet its chemistry has been well worked out and it is well known. Chinosol has this particular advantage over any other agent, namely, it will act on bacteria more quickly than it will on the surrounding tissues. And that is important. Phenol and agents of that kind have the disadvantage, particularly in the stronger preparations, of destroying tissue and rendering it susceptible to the action of the organisms without destroying them and you get a corrosion and destruction of tissue, and some of the organisms are not destroyed. Consequently, with the use of your agent you have rendered the field more favorable for the action of those organisms that remain, than there otherwise would be, and the chinosol does not do that to the extent that other agents do. It has some astringent properties on tissues, but it has no special corrosive properties. Therefore, I use it more commonly than I do some of the other agents. So far as its efficiency as a bactericidal agent is concerned, no one who has tried it fails to get good results. It cannot always be used in the treatment of teeth because it will discolor them, especially if you use steel instruments, or if it comes in contact with any of the other metals outside of gold or platinum.

As to the case mentioned by Dr. Carpenter, whether or not we would find the tubercle bacillus in that particular case is a question. We might look for the tubercle bacillus until doomsday and while it might be there, we might not find it, because tubercle bacilli are more liable to occur in clumps. A number of foci may be formed without disseminating themselves through the tissue very much, and in the small amount of material one uses for microscopic purposes he may miss the tubercle bacilli for a long time. We cannot always find them. Some years ago I had the case of a little girl who had all the appearances of a tubercular infection from a lower first molar. It was only by inoculation of animals that we were able to find tubercle bacilli. After some weeks, and after we had substantiated the hypothesis that it was tubercular by inoculation in animals, the tooth was extracted and the pericemental membrane near the apical end of the root was scraped off under as nearly aseptic conditions as possible, and microscopic slides disclosed tubercle bacilli in and around the diseased tissue. I venture to say, that we made over two hundred slides in this case before we were able to find the infectious spot. Of course, that is usually more work than the ordinary investigator would do to find such conditions. I wanted, however, to establish, if possible, the presence of tubercle bacilli by the microscope, and was successful in so doing.

Speaking of chinosol, it is a preparation made by the action of potassium nitrate and quinolin. Quinolin is a coal tar derivative. It is so unstable many times that it can hardly be defined. We may use in connection with that base quinolin which has really antiseptic properties. Quinolin does not act on animal tissue at all. It does not act on the animal cell. If you take the ameba, as found ordinarily, it has but little effect on it. It may stop the motility of it for a while, but it does not seem to affect it at all markedly. If you put a less amount on the germs of typhoid fever, which are very active, or if you put the smallest appreciable amount of it in the solution you are examining, you will find that the motility of the typhoid bacillus almost stops, it affects it so quickly and so rapidly. Many investigators on the subject of antiseptics have tried a number of times to attain the so-called quinolin product in the state that it can be used as an antiseptic, but as I have said before, it is so unstable and hard to get. It was the work of Klebs principally that really brought about the chemical combination in which we can obtain this substance in a condition so that it can be used constantly and kept indefinitely in bottles or even in the open air. It does not disassociate; the potassium nitrate is not separated from the quinolin ordinarily until it comes in contact with organic salts like the blood, the saliva, the urine, or some agent that is capable of breaking it up. You get solutions in water, but it does not really go into solution. You do not separate these two elements, and you simply hold suspended the mechanical solution, and when it comes in contact with the tissue, then it is readily disassociated and the quinolin seeks bacteria. That is the explanation that has been given by a number of persons who have worked with it. As to how much you can use, it makes but little difference. If you have a 5 per cent solution, you do not have as much of the agent as you would have if you had a 25 per cent solution, which is a saturated solution of the agent. The main thing is to hold it in suspension so that you can bring it in contact with the part you want to disinfect. The stronger solutions are more or less irritating; a 10 per cent solution, under the most favorable circumstances, is about as much as you would care to use. You will find it is sufficiently antiseptic to perform all the functions you would like to have an agent perform in disinfecting a part. You can introduce it into tissue and it will prove an excellent antiseptic.

I spoke of iodine and chloroform as disinfecting agents used in the excavation of cavities or in badly decayed teeth. Iodine is another agent that has a special affinity for bacteria apparently, and oftentimes we get excellent results by using it as a disinfectant. It is absorbed easily in certain infected areas, and especially where there is lymphoid tissue. It has a special action on such organisms as the ray fungus and the tubercle bacillus. Of course, it cannot be used internally because it is poisonous. But if one is careful and devotes sufficient time to its use, it can be used. If one had a saturated solution, or a 10 per cent or 15 per cent of potasium iodide at hand, and also some ammonia water, he can apply it to cavities of teeth, and wash it out with ammonia water, and many times you can remove the organisms in this way, which you could not remove from these cavities otherwise

As to chloroform, most of you know its inhibitory action on living substances. It has some effect on bacteria. In fact, it has the same effect on animals that it has on man, but it penetrates more deeply the dentine, and so do the iodine solutions. That is the main object of its use there, namely, to get as far into the tissues of the dentine with the solution as you can. You can probably disinfect the cavity and leave a considerable amount of dentine which otherwise you would have to remove, exposing possibly the pulp, or getting so near the pulp that it would die. With such solutions you can oftentimes save some excavations where you think it is important to do that.

As to the case Dr. Hinkins spoke of, I have no doubt it was due to tubercular infection. The ray fungus is a more common means of infection among the higher animals than man, and Dr. Brophy's case well illustrates that phase of it.

Some of you may remember, the first paper I ever read before the Chicago Dental Society of any consequence was in 1898 or 1899, in which I cited a number of cases of mouths where there was suspected tubercular infection, and out of a number of cases we found tubercle bacilli in some of them. The paper was published, I think, in the DENTAL REVIEW, shortly after which a Scotchman in Edinburgh followed up the work a little further and corresponded with me about it. He wrote an article on the subject, which was published in the *British Medical Journal,* which was very interesting, but covering substantially the same ground as I did, and he was kind enough to give me credit for opening up a new field of investigation.

As dentists, we go on and excavate a tooth and fill it without thinking anything about it, except the simple mechanical operation we are performing, and we do not always realize that we are probably working on one of the greatest sources of infection. As Dr. Brophy has said, there is no place in the human body where you can find as many bacteria to the square inch as you can find in the oral cavity that seemingly live with perfect impunity in the mouth for years and act, not in a deleterious manner, but sometimes, when the conditions are just right, with all the surroundings favorable, you notice in there, accidentally or otherwise, an infection—an extremely infectious condition—and you would be very glad to know how it happened. There is no question in my mind, from the observations I have made, that there are hundreds of teeth filled near their pulps, with the hope of preserving the pulps, when it would have been far better for the patients if those pulps had been removed, especially in younger people.

I feel that we ought to save as many pulps as we can, but I don't believe we should conserve the pulp of a tooth after twelve years of age in a person with the liability that at some future time it will give trouble, as in the case referred to by Dr. Carpenter. Bacteria were closed in there and had lived a sembiotic life. Several bacteria enter in the absence of the free oxygen of the air, and just as soon as an excavation is begun and the cavity filled, they are then fully prepared to live under anaerobic conditions, or without the oxygen of the air, and there they perform their function in a quiet, nice way until they get into the tissues, when the entire area soon becomes disseminated with bacteria. If you will observe, you will find that in ninety-five cases out of a hundred of this kind the trouble occurs during the school period of life. I do not know how much that has to do with the conditions, but I know that young people are especially liable to infection during that period. Prior to twenty years of age, they are more liable to become infected with these things than at any other period of their lives.

Lastly, I wish to thank you all for your free discussion and compliments, and I hope I may be able some time in the future to present to you a paper of as much or more value.

DR. BROPHY MARRIED.

On March 31, 1908, Dr. T. W. Brophy, of Chicago, was married to Mrs. Esther Strawbridge of Morristown, N. J. The DENTAL REVIEW extends congratulations and best wishes for many years of happiness.

DEATH OF MRS. W. T. MAGILL.

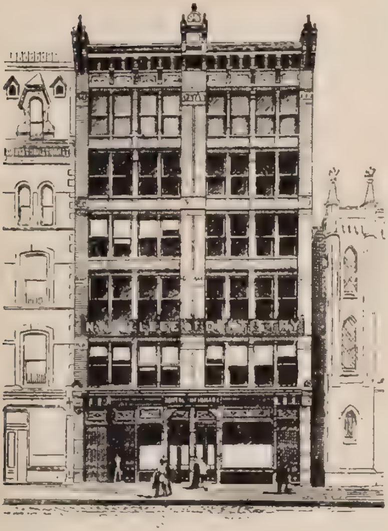
DIED at Rock Island, Ill., on Saturday, April 18, 1908, Mrs. Magill, wife of Dr. W. T. Magill. Dr. and Mrs. Magill had lived in the same house in Rock Island ever since their marriage in 1859, and always commanded the highest respect of the entire community. Last autumn Dr. Magill celebrated the fiftieth anniversary of his entrance on the practice of dentistry, and during all these years his wife has been his faithful co-worker and helpmate. We extend to the doctor our heartfelt sympathy.

THE DENTAL COLLEGES OF AMERICA.

College of Dental and Oral Surgery, New York, N. Y. First Class Graduated 1893. Total Number of Graduates to January, 1908, 250.

Dental Department, University of Buffalo, Buffalo, N. Y. First Class Graduated 1893. Total Number of Graduates to January, 1908, 689.

THE DENTAL COLLEGES OF AMERICA.


NEW YORK COLLEGE OF DENTISTRY

New York College of Dentistry, New York, N. Y. First Class Graduated 1867. Total Number of Graduates to January, 1908, 1,800.

Detroit College of Medicine, Department of Dental Surgery, Detroit, Mich. First Class Graduated 1894. Total Number of Graduates to January, 1908, 356.

THE DENTAL REVIEW.

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EDITORIAL.

SUGGESTIONS TO COLLEGE PROFESSORS AND STATE BOARDS.

The season is approaching when the final examinations in colleges for graduation and the examinations before state boards for license will be in full swing. The young men who have been attending college for three years are to be put to the final test as to their proficiency in the practice of dentistry before they receive the seal of approval from college or from board. And here is the rub. The difficulty of deciding as to a candidate's proficiency becomes more and more apparent to those who have had long experience in the work. It has for some time been the opinion of the writer that our present methods of examination are ineffective to determine a candidate's real ability to take proper care of the public. It may be impossible to institute a better method but it would sometimes seem as if more stress should be placed on a man's ability to diagnose and treat diseases of the mouth and teeth, to do the necessary technical operations on teeth in the mouth, to manage patients generally and deport himself like a gentleman, than on what he is able to place on paper in a written examination.

Written examinations may be necessary but an apt examiner can better judge of a candidate's ability in a half hour's oral examination and in an hour's observation of his operations at the chair or in the laboratory than from reading volumes of written matter. College professors would do better by their students if they judged them on their quizzes and their practical work—their diagnosis and treatment at the chair—their general demeanor in their relationship with patients, their quick wittedness in emergencies, and in all those things which enter vitally into their future practice. But college professors cannot content themselves with what they may think is best for the student. They must perforce prepare them for passing state board examinations, which means that they must try to pack the heads of the students with the answers to a lot of questions, many of which have little or no relation to their future work.

After all an examination as conducted now seldom examines. It is no real test as to a man's ability. The board may do the best it can but it is impossible to tell by present methods just who should be given a license and who not.

The suggestions we have to make to professors and state board examiners is to confine their questions more to the vital things of professional practice—the things the candidate will most need to enable him to properly serve the public. The function of the college and the board is to conserve the best interests of the people and when this is realized in its fullest sense all examiners, both in the college and on the board, will approach their duties in a more intelligent relationship than many of them have in the past.

THE EDITOR'S DESK.

AN AUTOMOBILE RIDE.

Years ago when the things first came out I had a ride in one that made my hair curl. I have been trying to forget it ever since, but it is the Banquo's ghost of my transportation system and the negative has always been preserved. I can see in my sleep yet the diabolic grin on the face of the demon at the throttle as he watched me clinging to the sides of the seat. And he was my friend too. "Scared, Doctor?" he asked nonchalantly as we went whizzing past another devil-wagon, and missed it only by an eyelash. "I hope you're not nervous," he remarked, an instant later, when the machine suddenly changed its mind and swept around a corner on two wheels —so it seemed to me. "Nervous!" said I, "well I should say not! This machine is running beautifully, and you seem to have such perfect control over it." Why is it that a man will lie so deliberately when his personal bravery is in question? I have been trying to atone for that falsehood ever since, but when I think of the enormity of the lie it appalls me. The fact is I was frightened nearly into frazzles—whatever that is—and would have sold out my interest in that ride for two cents on the dollar.

"Like to take hold of her for a bit, Doctor?" said my friend. "She's running along beautifully just now, and I know you'd enjoy it." I have been wondering ever since what he would have done if I had offered to comply with his request, because he was level headed enough to know that I couldn't have run her three inches in safety, but I was too seriously in earnest to think of calling his bluff. "N-n-no thanks," I replied, trying to make it as off hand as possible. "I'll get in and run her some other time. I haven't any gloves on today—I mean automobile gloves," I added, as I happened to think that I did have gloves on that very moment.

My friend grinned a bit and then tried to upset us—at least that is what it appeared like as he cut another corner so close that I was certain he would nip a corner off the curbing. But I must say the machine stuck to the ground with amazing pertinacity. "Here's a fine stretch ahead," said my friend, the demon, "so I'll just let her out a little." We were facing the wind and I was soon hanging to my hat and blinking desperately. The tears were streaming down my cheeks from the wind, my teeth were chattering, and I was bumping so on the quivering machine that I expected to be tossed every moment over into the next county. "Wasn't that fine?" exclaimed the demon as he slowed her down a trifle. "Ye-e-s," I acknowledged—lie number three. "How fast were we going?" I asked as soon as I found my breath. "Oh, that was only about forty-five an hour," he answered as if we had merely been loafing.

But there is a heap of difference between forty-five miles an hour when you are at the lever yourself, or when you are simply sitting in the machine at the mercy of some one else. And so it is in every activity of life. If you have command of the situation it gives you confidence, and you can make greater speed with less anxiety than if you are always relying on others. This holds true not only of running automobiles but of running anything—a cattle ranch, a dental office, a saw mill, a grocery store, a political campaign or a prayer meeting. Above all it holds true of running yourself.

The moral of all of which is, get command of the situation—and of yourself.

DOMESTIC CORRESPONDENCE.

SOME COMMENTS ON "SWAN SONGS" BY DR. TALBOTT IN THE MARCH DENTAL COSMOS.

To the Editor: "Dentistry has drifted in the last thirty years." Surely, if we do not go forward, we do drift. There is no stasis in progress. What is the prevailing cause of drifting?

We answer, first and last, controversy consisting of unjust and prejudiced opinions and ignorance. Some men so much preach themselves that they utterly fail to catch the spirit of St. Paul, who is distinctly the supreme advocate of truth and its only source. He says: "We preach not ourselves, but the Truth, whose servants we are." Too many men avoid the only correct method of looking at Truth from the fact that they know nothing of principles. They have either misemployed their opportunities, or have become the servant of mechanics, which narrow sphere leads to selfishness and avariciousness. We do not take Dr. Talbott's idea to be that we are in a hopeless condition for developing a definite scientific advancement. We are optimistic. That we are drifting, it cannot be denied.

There are those that will continue to do so. They are deadwood, by the very nature of the mental fibre of which they are constructed. So we say, let them drift.

We are free to assert that no one writer has so much earnest and intelligent attention in his writings as the industrious Dr. Talbott. We marvel at the industry of some of our co-workers. We will make an isolated mention of one that has done so much with little hope of ever being remunerated, at least financially—that is Dr. Farrar. His volumes are ponderous, but they will tell a story when he is gone that will be profitable to emulate. These will be like text-books for many a coming dentist. The illustrations make detail simple.

On page 239, Dr. Talbott says: "We must decide whether our schools shall remain schools of mechanics or broaden out and include biology. We think this is reasonable, but we also think that there is wisdom enough to bring the solution of this question to a successful issue. Again on page 239, "The doctor says that 'The day is fast approaching when we must put our house in order in America, for European schools are preparing to take the lead.'" Certainly, this assertion should cause us to stir our latent ability.

We are frank to say that we do not see our leaders in this movement as we have had in other days, such as Harris and Atkinson. True, the developments of our time are different. We are not feeling after light nor principles. We have them directly at hand, but they must be formulated and taught. At a banquet given us at the fortieth anniversaray of the Brooklyn Dental Society in December, we were asked to give our ideas regarding the future of dentistry, and we advocated that this society form some connection with the Long Island Medical College, teaching along lines of preventive dentistry, which in our view definitely includes all that Dr. Talbott holds so dearly and has so voluminously put on record. We prophesied to this body of Brooklyn dentists that they would reflect great credit upon themselves, and would find able teachers who would rally to their aid, and in the end the project would result in profit to their calling, to the world and lastly to themselves.

Page 239 again, Dr. Talbott says, "The Bird of Paradise must come out and get some fresh air." Just what is meant by this remark we are not quite clear, but this suggests to us it may need a fresh air fund to bring this into effect.

We wish to call attention once more to the open letter we published in the journals a year ago last December calling for a conference on the subject of preventive dentistry. In this we did not have a narrow thought, but meant to cover mechanics and science. There must be an intelligent union. Call a conference and bring harmony out of discord.

G. Alden Mills,
226 Central Park West, New York City.

To the Editor of The Dental Review.

Sir: In your issue of April, 1908, at page 280, in an article by Drs. Acree and Hinkins, it is stated, "One writer (to-wit, myself) claims that all cases of general erosion of the teeth are due to lactic acid, and that all cases of local erosion are due to the presence of calcium dihydrogen phosphate or sodium dihydrogen phosphate."

I had supposed that I had said enough and explicitly enough to make plain that this oft-repeated statement by the trio of gentlemen who have been contributing their views upon this subject from time to time was a perversion of the facts. I have in various ways and on several occasions publicly and in print denied this assertion as representing my views. In your issue for June, 1906, at page 644, you, and any others interested, will find my recorded protest at this continued misrepresentation.

I again protest at this renewed attempt to impute to me opinions which I do not hold nor never did hold. I can only conclude that either the authors of the objectionable statement do not read THE DENTAL REVIEW or else that they wilfully continue to publish this untrue statement from motives which, to say the least, are not compatible with scientific accuracy. I have already asked, Mr. Editor, if you can suggest any method by which I can so state this question that it will prevent further misquotations of my views on this subject. Perhaps if you will send to the contributors in question each a marked copy of your June, 1906, issue, as well as of the present issue, it may assist in keeping before them at least what I don't believe about erosion, even if they are not able to comprehend what I do believe about erosion.

Very truly yours,

EDWARD C. KIRK.

Philadelphia, April 7, 1908.

NEW YORK LETTER.

Dear Mr. Editor:—

We had to skip our usual letter last month but hope our résumé of the situation as now given may be satisfactory. You know we all gave Charlie Meeker a dinner in January which was quite an elaborate affair, and paved the way for several other functions of a like character. In fact, the genial toastmaster and presiding genius of the occasion, William Wallace Walker, said then and there that early next winter that room (the Astor gallery), should be filled with those who would be doing homage to E. T. Darby in January, a matter which he intends to keep before us all the time.

On the 21st of March, following the example just mentioned, a rousing reception and dinner was given to Dr. J. Nutting Farrar, one of our oldest, best known, most lovable men. Nothing could have been more fitting. It would be impossible, Mr. Editor, to give you in detail all that was said and done. Dr. W. W. Walker was toastmaster, and was in a peculiarly happy mood that night. In opening the proceedings he proposed a silent toast to the memory of those who had "passed beyond" recently—Drs. J. Bond Littig, John I. Hart, Samuel Goldsmith, R. C. Brewster and Eugene Palmer—which toast the assemblage drank standing.

After a few words eulogistic of Dr. Farrar, Dr. R. Ottolengui was given the floor for the purpose of presenting the guest of the evening with a beautiful silver "loving cup," which he did in a very pleasant manner, the entire assemblage rising and singing "Should Auld Acquaintance be Forgot."

Dr. Farrar was then introduced and, Mr. Editor, I cannot resist the temptation to repeat verbatim some things he said. "I regard the profession of dentistry as equal to any profession in the world. I cannot understand how anyone can undertake to be a specialist in dentistry who is not an all-around dentist. I advise young men to learn all branches of dentistry equally well. No man has ever come to me for advice and been given the cold shoulder."

Dr. Safford G. Perry spoke of having been a classmate with Dr. Farrar, Dr. Darby, Dr. Guilford, Dr. Register and others, and from beginning to end, knowing Dr. Farrar as he does, he had naught but good to say. Drs. C. S. Stockton, of New Jersey; J. Lowe Young and Meyer L. Rhein, of New Work, followed. Very noticeable in their remarks was the fact that they knew and were willing to speak of the "extreme generosity and kindness of heart" possessed by Dr. Farrar.

Dr. C. A. Meeker, of New Jersey, came next, taking the occasion to boom his latest fad, a venture in dental journalism called the *Dental Scrap Book,* and as he represents the "Jersey Hornets," it's very likely that there will be a "scrap" on nearly all the time.

Then came one of our recent "retirists," than whom no one in our profession has ever been so much beloved, Dr. A. L. Northrop, of whom Dr. Walker said: "Here he is, the sweetest and dearest thing that ever lived." He was introduced as having been the first president of the first District Dental Society. After him came Dr. V. H. Jackson, an exponent of a school of orthodontia and appliances unique in themselves. He emphasized the fact that "one who does not follow up and read carefully the Dr. Farrar writings and the principles he laid down years ago, is making one of the mistakes of his life." Dr. B. F. Luckey, as a representative New Jerseyman, then spoke, followed by Dr. Chas. Ash and Dr. W. J. Turner, as representing Brooklyn.

Dr. E. S. Gaylord, of New Haven, and Dr. E. S. Niles, of Boston, spoke for the New England section in the same highly eulogistic vein as had the others. Before calling on Dr. Farrar to close the speaking, Dr. Walker said that his "next lecture" would be given in Baltimore on the occasion of a dinner to Dr. M. Whildin Foster, dean of the Baltimore Dental College, one week later, and asked for a resolution of love and respect, which he might carry to Professor Foster, which was, of course, unanimously carried.

At the February meeting of the Institute of Dental Technique, several good things were shown at the five o'clock clinic. Dr. F. R. Getz showed his method of "Restoration of Broken Incisors in Children." He makes a cap of thin platinum to fit over the broken portion, on which the porcelain restoration is built, and then cemented over the broken tooth. The band shows, of course, but protects the sensitive broken portion and the porcelain restoration makes the alignment correct.

In the evening Dr. Robert T. Morris, of New York, read a paper on "The Sterilization of Instruments." He said that dentists, as a rule, are not as particular as surgeons about asepsis, probably because their work "is in what we call one of the protected areas of the body." To have dental instruments properly sterilized he said it was necessary for them to be free from all traces of rust. He spoke of the use of a saturated solution of stannous chloride which, he claimed, would not only remove hiding places for minute bacteria but also keep sharp edges of instruments intact. He emphasized the fact that he knew "with certainty that the sterilization of dental instruments is very often neglected" and that it was a mistake to suppose that patients did not know a great deal about the sterilization of instruments.

At the March meeting of this society the clinics were mainly along the line of cast gold inlays. In the evening Dr. Fony R. Getz read a paper descriptive of his clinic of the month previous on the "Restoration of Broken Incisors in Children," and Dr. Thaddeus P. Hyatt gave his public school lecture on "Ancient and Modern Dentistry and Care of the Teeth," which is a lecture he has given frequently in the last few years before the public schools of Brooklyn, and has attracted much attention.

At the March meeting of the Institute of Stomatology, Dr. Andrew J. McDonagh, of Toronto, Canada, read a paper entitled "Pyorrhea: Its Cause and Cure." He spoke of its origin, of two or three different diseases called pyorrhea, of the work of Talbot, D. D. Smith, Younger and others. He advocated the use of a small brush, and described the method he preferred patients to follow.

Dr. R. G. Hutchinson, Jr., of Brooklyn, opened the discussion. He said more teeth were lost by pyorrhea than by any other cause. Thought the practical side was more important than the etiology. He emphasized the necessity for thorough polishing of all roughened surfaces.

Dr. Henry W. Gillette would go even farther than the essayist in the endeavor to get all deposits removed, and make the surfaces as smooth as possible. He thought that strong escharotics were not desirable.

At the April meeting of this organization Mr. Horace Fletcher, author of "The A. B.-Z. of Our Own Nutrition," made an address on "Modern Dentistry as Preventive Medicine." Most of what he said, however, was descriptive of how he had taught himself to eat properly and brought himself back to robust health.

The discussion was opened by Dr. William Gilbert Anderson, physical director of the gymnasium of Yale University, followed by Max Einhorn, M. D., of New York, and others, all, however, along the line of what to eat and how to eat it properly, showing great divergence of opinion. The underlying element, however, was the fact that modern dentistry enabled one to have the teeth in such condition that proper mastication could readily be performed and thereby become "preventive medicine."

On the evening of St. Patrick's Day, March 17, the Odontological Society listened to an elaborate paper entitled "Chirognomy in Dentistry," by Dr. W. H. Whitslar, of Cleveland, Ohio, which was profusely illustrated.

Dr. S. C. G. Watkins, of Montclair, N. J., opened the discussion and exhibited casts of the hands of many celebrated persons.

Annual meetings and election of officers are the thing this month, in preparation for the annual state meeting early in May at Albany. This bids fair to be an exceedingly interesting meeting this year, and we hope to give you a good report.

Yours truly,
"THE BORROUGHS."

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

A Convenient Flask Lifter:—Beat out perfectly flat the bowl of a very large iron spoon; then bend it at nearly right angle to the handle This makes a very satisfactory lifter for placing and removing flasks when hot.—*T. J. McCracken, Portland, Oregon.*

To Collect Spilled Mercury:—Roll a clean piece of tin foil tightly to the size of the lead in a pencil. Touch the scattered globules of mercury with the end of the roll, thus gathering as much mercury as it will carry. Squeeze the collected mercury into a suitable receptacle, much as you would amalgam.—*George C. McCann, Danville, Ill.*

Inlay Bridges:—I want to sound a note of warning regarding the assembling of inlay bridges. If contact points of abutment teeth are not tight against the teeth standing anteriorly and distally to them, ligate firmly just before taking the impression and bite preparatory to the final assembling of inlays and dummies.—*Elliott R. Carpenter, Chicago.*

Warning:—As I look over my own practice, it seems to me, I have been in the habit of neglecting many things. I think the drift of dentistry in the last few years has been rather to look too much into the new and neglect the old, and we are so engrossed with our porcelain fillings and gold castings that we are apt to forget some of the fundamental principles of practice which have a great deal more bearing as regards the appearance, the usefulness and the comfort of the teeth.—*L. S. Tenney, Chicago.*

Cast Inlays for Bridges:—We must consider metallurgy in the casting of inlays. After looking over the properties of different elements, I believe that certain of the elements which come in contact with gold will change the fibres of gold to a crystalline, and *vice versa.* I think that is why we have many failures in making inlay bridges with a combination of metals. In heating them above a certain temperature, instead of the bridge being fibrous, it becomes crystalline and breaks.—*J. E. Hinkins, Chicago.*

Root Amputation—In case of pyorrhea alveolaris occurring about the lingual root of an upper molar, I would not leave any condition that would allow deposits to be held in contact with the other roots. I would take a cross-cut or fissure bur and cut from the mesial to the distal through the center of the tooth, and then extract the lingual root with its portion of the crown; then on the two buccal roots I would place a long, flat crown. With a lower molar involved I would cut from the buccal to the lingual between the mesial and distal roots and extract one. I consider that better practice than cutting off the end of the root.—*W. H. G. Logan, Chicago.*

Malocclusion of Teeth:—As to the correction of malocclusion of the teeth, I believe an appliance that is at the command of the dentist is neglected. We have carbon paper or impression paper for determining whether the teeth occlude properly or not, and we neglect the use of that more than any one thing in our offices. All our fillings and crowns should be tested to see whether they are in proper occlusion or not. The occlusion may be bad on account of some change we have made, or on account of some change made by some of the teeth moving. Pyorrhea can be prevented, or the cure of it assisted, by the intelligent use of the carborundum wheel and sand paper disc.—*A. E. Royce, Chicago.*

Starting Gold Fillings With Cement:—Prepare the cavity as you would for any gold filling, only avoid making any retaining pits. Having the dam applied and the cavity thoroughly dry, mix the cement in the usual way and with a small instrument place a little of the cement in the bottom of the cavity, immediately following with two or three pellets of gold into the cement and thoroughly condense. Remove excess cement from around the margins, and add more gold until the filling is finished. In this way you will have no fillings rock, besides the ease in starting the gold. You will also have a non-conductor under the gold, which will prevent trouble from thermal changes.—*A. B. Tate, Paragould, Ark.*

Opening Into Abscessed Cavities:—Within the last few years I have modified my methods of operating on these cases considerably. Formerly I made an incision reaching to the bone, dissecting back the periosteum, opening into the cavity, curetting it out, cutting off the root, and packing it to force the parts away so that granulations might form and fill the cavity and thus bring about repair. I have adopted a different plan which I know will serve my purpose better. Instead of holding away the overlying gums and overlying periosteum over the bone, I make a funnel-shaped opening, taking away this tissue and leaving a saucer-shaped cavity, and there is no packing required. Granulations will form, the cavity will fill, and repair will follow without any depression in the part.—*Truman W. Brophy, Chicago.*

Alveolar Abscess:—During all our evolution in the treatment of alveolar abscess, we have had to combat the trouble of cleaning and enlarging tortuous canals. A good method of procedure is to adjust the rubber dam and then open up the cavity of decay in the tooth sufficient to allow of easy access to the pulp chamber and entrance to the canal; then wipe out the cavity with alcohol; then follow with kresol and formalin, or some of the essential oils as germicides, and remove the debris carefully, so as to avoid crowning any of the foreign matter through the apical foramen; then apply a dressing of kresol and formalin and seal up the cavity for a week. At the next treatment remove all foreign matter, and repeat the dressing, leaving it in for another week. If all is going nicely at the end of that time, proceed to fill the roots permanently with sandarac varnish and gutta percha points, and insert a temporary filling in the cavity of decay for a few weeks, after which a permanent filling, or crown, can be made.—*Charles P. Pruyn, Chicago.*

Extracting Deciduous Teeth:—We sometimes find it necessary to remove a deciduous root and the operation may be made less painful by adopting the following method: Place a thin pad of absorbent cotton over the end of the root, allowing the borders of the cotton to extend far enough beyond the margins of the root, or tooth, to make a cushion between the beaks of the forceps and the gums. This prevents the cold, hard steel from coming in contact with the soft tissues, and also will permit a firmer grip of the forceps on the root. The cotton pad should be thin enough to stretch, or tear, over the end of the tooth when pressing the instrument to position.

Having removed several teeth in this way, and noting the results, I feel assured that much fear in the minds of our little patients may be eliminated, thereby gaining their confidence and preparing them for future work, which would be neglected unless the dread previously instilled by careless gossip of parents is dispelled.

This method may be employed in the extraction of permanent teeth.—*G. W. J.*

Amputation and Replantation:—I amputate palatal roots frequently—the roots of molars that have become uncovered from pyorrhea alveolaris. That is, of course, amputation *in situ;* but in single root teeth that have become affected by disease I had no success in amputating them *in situ.* I adopted the plan of extracting these teeth and placing them in an antiseptic solution at a temperature of 105°, let them soak for awhile. I then wrap them in a piece of gauze saturated in the same solution, drill into the crowns of the teeth to gain access to the canals, pass a drill through the apical foramen, washing out the canal thoroughly with an antiseptic solution, place the tooth again in the solution, allowing it to remain for fifteen minutes in 1-1,000 bichloride, remove and amputate the diseased end with a saw in the dental engine, and grind smooth with a stone. First, however, I fill the root with gutta percha solution, forcing it up so that it passes through the apical foramen. I then cut off the surplus gutta percha from the end of the root, enlarge the apical foramen and fill it with gold. I reverse the process and fill the other end with gold in the crown; then place the tooth back in the solution and allow it to remain there while I prepare the cavity from which it has been extracted. I wash this out carefully and with a burr passed through the alveolus tear up the sac, and wash the cavity again with 1-1,000 solution of bichloride. I always take an impression before extracting the tooth, constructing a splint of gold which would cover this tooth and the one on each side of it. After the abscessed cavity has been thoroughly washed out and curetted the tooth is put back in position and the splint cemented on.—*John S. Marshall, California.*

BOOK REVIEWS.

OPERATIVE DENTISTRY. By G. V. BLACK, M. D., D. D. S., SC. D., LL. D.

We have been permitted to examine the proof sheets of this important work, and we wish to commend it in the highest terms to the profession. Dr. Black has been engaged upon it for years, and it contains the essence of his latest thought upon the subject. The work is divided into two volumes, the first on "The Pathology of the Hard Tissues of the Teeth," and the second on "The Technical Procedures in Filling Teeth." The first volume considers such subjects as: Atrophy of the Teeth; Erosion of the Teeth; Caries of the Teeth; Systemic Conditions; Management of patients; The Force Used in Mastication in Relation to the Strength and Health of the Peridental Membrane; Management of Light and Care of the Eyes; Examinations of the Mouth; Treatment of Dental Caries, etc., etc. The second volume takes up, as its title implies, the technical procedures. It considers Nomenclature; Instruments, and Instrumentation; The Rubber Dam; Histological Structure of the Teeth in Relation to Cavity Preparation; Cavity Preparation; Filling Materials; Porcelain and Gold Inlays; Exposure and Removal of the Dental Pulp and the Filling of Root Canals, etc.

One of the most important features of the work relates to the illustrations. In the two volumes there are six hundred and thirty-four, nearly all of which are original. They are most effective and beautiful and lend vividness to the descriptive matter in the text. The typographical features of the work are of the highest order, and it is a pleasure to read it aside from its absorbing interest. All in all the work is a classic and should be in the possession of every practicing dentist and every dental student. The price for the two volumes is $10.00. Pages, 824. Published by the Medico-Dental Publishing Company, 87 Wabash avenue, Chicago.

DENTAL ORTHOPEDIA. A Practical Treatise Upon the Technics and Principles of Dental Orthopedia. By CALVIN S. CASE, M. D., D. D. S., Chicago, Ill. Published by the C. S. Case Company.

Notwithstanding the noteworthy progress made in all the practical departments of dentistry within the past few years, for some reason there has been a dearth of book-making. The above long expected and anxiously awaited production of this eminent author and teacher is therefore timely. It is timely also because of its intrinsic value as a text and reference book for the student, for the practitioner, and for the teacher, and it amply and beautifully fulfills these composite requirements, and in every way is the work of a master, masterfully produced.

The one great fault so often found with most of the books pertaining to the art and science of dentistry is an effort to be voluminous rather than concise and practical, and an absence of that one essential element to the very life and usefulness of any scientific production: classification and system. In "Dental Orthopedia," however, such a criticism could not possibly be applied, for the book is elaborately gotten up, is fascinatingly artistic from cover to cover, is originally and ingeniously practical, is systematic, concise, and yet in every way complete.

In presenting this splendid work, the fruit of many years of labor devoted to the practice of the specialty of orthodontia, and of more than five years' actual work incident to its production, the author has spared no effort or energy to present the subject in a manner which may be readily grasped by the student, easily followed and understood by the practitioner, and at once appreciated by the teacher. While the treatment of the subject fittingly exemplifies the individuality of the author and is based upon the results of many years of experience, still where his views strongly conflict with the teachings of others the latter are fairly considered, and the two are justly compared.

The subject has been divided into six separate parts, as follows: Part I: Technics of Dental Orthopedia. Part II: Primary Principles of Dental Orthopedia. Part III: Principles of Diagnosis and Treatment. Part IV: Practical Treatment of Simple and Complex Malpositions. Part V: Practical Treatment of Dento-facial Irregularities. Part VI: Principles and Technics of Retention.

Each of these is so comprehensively treated and the whole so systematically brought forward and carried out, as to command the admiration of all who are interested in the subject. This is apparent to the writer for the reason that the student can learn the subject by that best of all teaching methods, the classroom recitation; the practitioner can study, classify and treat his cases in a thoroughly practical manner; and the teacher has an intelligible guide to the latest and most systematic methods of presenting his subject.

While the author's classification of the various types of malocclusion of the teeth, which is now much more simplified than a previous presentation, differs from the efforts of others along this line, it seems to be equally simple, and when comprehended will easily, if not more readily, lead to the recognition of actual conditions.

The chapters on "Principles of Applied Force," "Diagnosis," "Dento-facial Irregularities," and the "Principles and Technics of Retention" are original, practical, sound and superbly comprehensive.

The book, with its beautifully embossed half Morocco covers, is a work of art, second to none ever published on dental topics. Its 400 large pages printed on the finest of "Diamond D" paper is profusely and ingeniously illustrated with over 100 working drawings of practical regulating apparatus, 300 zinc and wood cut illustrations, and 120 halftones. In this particular it is a uniquely artistic production, for it is probable that no other dental work was ever so extensively illustrated with absolutely original pen and pencil drawings, and that the profession has few, if any, who are quite so gifted in this faculty.

To the average practitioner, one of the most valuable additions to the book is the catalogue which accompanies it, and by which dentists, after first ascertaining the type of malocclusion and the appliances demanded in the treatment, may then order the apparatus in part or in whole, assemble and adjust it upon the teeth, and thus successfully practice the art of regulating teeth in a manner heretofore impossible.

H. J. G.

MEMORANDA.

CHRISTENSEN.

In Dr. Prothero's paper in our March number the author referred to Dr. "Christianson." It should have been Dr. Carl Christensen.

A CORRECTION.

In our editorial in the April number on "An Excellent Temporary Filling," the term "zinc sulphide" was used when it should be "zinc sulphate."

CANADIAN DENTAL ASSOCIATION.

The Canadian Dental Association will hold its fourth bi-annual meeting in the Normal School, Ottawa, Can., on the 4th, 5th and 6th of August next.

LEONARD E. STANLEY, Secretary.

WISCONSIN STATE DENTAL SOCIETY.

The thirty-eighth annual meeting will be held in La Crosse, Wis., July 21, 22 and 23, 1908.

HARVEY N. JACKSON, Secretary, Milwaukee.

IOWA BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting for examination at Iowa City, June 12, 13, 15, 16, 17, 1908. Written and practical examination will be required. For further information, address, E. D. Brower, secretary, Le Mars, Iowa.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

This board will meet for the examination of applicants at Louisville on the first Tuesday in June, 1908. For particulars, address

DR. J. RICHARD WALLACE, Secretary,
The Masonic, Louisville, Ky.

ALUMNI ASSOCIATION, UNIVERSITY OF CALIFORNIA.

The Alumni Association, Dental Department of the University of California, will hold its annual clinic on Monday and Tuesday, May 11th and 12th, at the Affiliated Colleges, San Francisco, Cal. A program of seventy-five excellent clinics with discussions will be presented.

HAROLD L. SEAGER, President.

VIRGINIA STATE DENTAL ASSOCIATION.

The thirty-ninth annual session of the Virginia State Dental Association will be held at Murphy's Hotel Annex, Richmond, Va., beginning July 14, 1908. The intention of the society is to make this the most successful meeting in the history of the organization. Clinics will be given and papers read by eminent members of the profession. All ethical practitioners are cordially invited to attend.

MISSISSIPPI DENTAL ASSOCIATION.

The fifteenth annual meeting of the Mississippi Dental Association will be held in the Senate Chamber of the Capitol at Jackson, Miss., on June 9, 10 and 11.

A special program is being arranged and a large attendance is expected. All ethical practitioners invited. For further particulars, address Dr. E. Douglas Hood, secretary, Tupelo, Miss.

MICHIGAN STATE DENTAL SOCIETY.

Annual Meeting and Boat Trip Combined.

The Michigan State Dental Society will hold its annual meeting on Wednesday, Thursday, Friday and Saturday, June 10th to 13th inclusive, on board the steamer City of Mackinaw on a trip through the Detroit river, Lake St. Clair, the Flats, and on to Mackinaw and the "Soo." The total expense of the trip, including passage, meals, berth, will be nineteen dollars for the round trip, and all our ethical dentists and friends are cordially invited to join us.

The principal feature of the meeting will be table clinics, good papers, a complete dental exhibit and a good time.

Four days to find out what your fellow practitioners are doing; an ideal meeting under ideal conditions.

Those desiring to have accommodations reserved for them should apply at once to Dr. O. W. White, 406 Fine Arts building, Detroit, stating the number of persons in party, and whether it is a family party or all men. A deposit of five dollars is required for each reservation.

This courtesy will be greatly appreciated by the Michigan State Dental Society and committee.

O. W. WHITE,
Local Arrangements Committee.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held Monday, June 15, 1908, at the Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

Application must be made to the secretary fifteen days before examination. The candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry for four consecutive years, or have been an apprentice to a reputable dentist for five years. For further particulars, apply to C. S. McIndoe, secretary, Rhinelander, Wis.

MISSISSIPPI STATE BOARD OF DENTAL EXAMINERS.

The newly appointed board of dental examiners for Mississippi consists of Drs. P. H. Wright, Oxford; L. B. McLaurin, Natchez; A. B. Kelly, Yazoo City; C. T. Shumaker, Poplarville, and E. Douglas Hood, Tupelo. All are members of the State Association and represent the most ethical class of practitioners in the state.

The board organized and elected Dr. A. B. Kelly, of Yazoo City, president, and Dr. E. Douglas Hood, of Tupelo, secretary. The board will meet to examine applicants May 19, in Jackson. For particulars and requirements, address E. Douglas Hood, secretary.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will begin Monday, July 20, 1908, beginning promptly at 9 o'clock a. m. and continuing three days, at Lead, S. D. All persons desiring to take this examination must make application to the secretary, and send fee of $10.00 at least one week prior to the above date. No candidates will be received for examination who do not make application as above specified. Applicants are required to bring dental engine, filling materials, articulators, teeth, and all appliances and materials necessary to do crown and bridge work.

G. W. COLLINS, Secretary.

RECENT PATENTS OF INTEREST TO DENTISTS.

880,277. Tooth brush, O. H. Chandler, Clinton, S. C.

880,328. Combined impression tray and cheek distender, R. E. Sadler, Cleveland, Ohio.

880,432. Tooth-brush cabinet, G. A. Weidhaas, Jr., New York, N. Y.

880,740. Dental soldering device, A. H. Joy, Newton, Iowa.

880,896. Anchor for contour amalgam fillings, F. W. Linnert, Warrenton, Mo.

880,899. Dental articulator, W. Luxmore, Chicago, Ill.

881,574. Dental crown swaging machine, L. C. Graham, Whigham, Ga.

881,469. Attachment for dental syringes, C. W. Hale, Springfield, Mass.

881,691. Mandrel for dental engines, H. S. Hughes, Union City, Tenn.

881,722. Dental tool, E. R. Sausser, Philadelphia, Pa.

882,375. Dental articulator, A. V. Dear, Malvern, Victoria, Australia.

882,002. Dental swaging device, R. G. Hopkins, Des Moines, Iowa.

882,155. Dental impression tray, W. T. Lyon, Portland, Ore.
882,404. Dental forceps, W. C. Miner, Boston, Mass.
882,352. Tooth brush, F. F. Shumer, Norwalk, Ohio.
882,363. Dental instrument, J. T. Wright, Richmond, Va.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the state of Illinois will be held in Chicago, at the Northwestern University Dental School, southeast corner of Lake and Dearborn streets, beginning Thursday, June 4, 1908, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school, or dental department of a reputable university, or (3) is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board.

Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty ($20) dollars, with the additional fee of five ($5) dollars for a license.

Address all communications to J. G. Reid, secretary, 1204 Trude building, Chicago, Ill.

NATIONAL DENTAL ASSOCIATION.

The twelfth annual meeting of the National Dental Association will be held in Boston, Mass., July 28 to 31, 1908, inclusive. This association, twenty-eight years ago, then known as the American Dental association, met in the capital of New England, since which time many changes have taken place.

To the stranger within her gates, Boston is a most interesting city, especially from an historical standpoint, there being much to entertain all. Her suburbs are unsurpassed, being considered by experts the finest in this country.

The Local Committee of Arrangements has selected the Hotel Somerset, on Commonwealth avenue, at Fenway entrance to the Park System, as headquarters, where all general and section sessions will be held, together with all exhibits.

The clinics are to be given at Tufts College Medical and Dental School building, on Huntington avenue, a short distance from the hotel. The mornings of Wednesday and Thursday will be devoted to them.

Hotel rates on European plan are as follows: $4.00 per day for two in a room with bath; $3.00 per day for one in a room with bath; $3.50 per day for two in a room without bath; $2.50 per day for one in a room without bath.

Secure same in advance either by wire or letter to the management or to the local committee of arrangements. The committee is planning many features of interest for the entertainment of all.

Membership in the association is open to only delegates from state societies, yet a most cordial invitation is extended to all reputable practitioners to attend this convention. Waldo E. Boardman, chairman, 419 Boylston street, Boston, Mass; Frank T. Taylor, secretary, local committee of arrangements.

THE

DENTAL REVIEW.

Vol. XXII. CHICAGO, JUNE, 1908. No. 6

ANNUAL ADDRESS OF THE ILLINOIS STATE DENTAL SOCIETY.*

BY DR. W. A. JOHNSTON, PRESIDENT, PEORIA, ILLINOIS.

Honored Guests, Ladies and Gentlemen of the Illinois State Dental Society:

It is with mingled feelings of gratitude and alarm that I begin my duties, at this, the Forty-fourth Annual Meeting of this society.

As the meeting progresses, I trust that the alarm will disappear, under your kindly consideration for my youth and inexperience, but the feeling of gratitude will increase with the hours of my service, and will remain with me through life as a fragrant memory of undeserved honor, bestowed by those with whom I have met and whose friendship I have prized for twenty-five years.

Janus, the old Roman divinity who presided over the beginning of things, was represented as having two faces, one looking toward the rising and the other toward the setting sun.

In looking over the transactions of this society as far back as I could get them, I find that Janus might easily be adopted as the Patron Saint of the presidents, for each one in turn has first taken a retrospective glance, and then, looking into the future, has expressed his hopes and fears, his desires and aspirations for the coming year.

Do not understand me to imply that any of my predecessors have been two faced, for the list of presiding officers since the birth of this society reveals an array of names of which any organization on earth might well be proud.

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*Read before the Illinois State Dental Society, Springfield, May 12, 1908.

The temptation is very strong to go back into the history of the society and trace the evolution of dentistry, as evidenced by the papers presented, but Dr. Harned will cover the ground so thoroughly that I leave the subject with the reflection that when the final records are made up it will be found that Illinois has done her share in bringing the dental profession up to the vantage ground it occupies today.

Have you ever stopped to think of the personnel of the Illinois State Dental Society in its earlier days?

It gives one a thrill to think of the illustrious ones who have made their mark on dental history for all time, and we straighten up and face the present problems with braver hearts when we think that our names are associated with those to whom I refer. It is not necessary to mention them.

"Ye saw their deeds—
The name that dwells on every tongue
No minstrel needs."

But, thank God, the brainy men in this Society are not all dead ones, and it might be well for us if we indulged in more taffy and less epitaphy.

There are so many smart men in our ranks today that to enumerate would be equivalent to asking the secretary to call the roll. For this reason this Society must bestir itself. Not much is expected of a fool, but a wise man is supposed to give an account of himself.

"For unto whomsoever much is given, of him shall much be required."

No one is disposed to deny that we are well up in the front of the procession, but we must not for an instant forget that we can retain our place only by constant, strenuous endeavor. Present attainment is all very well, but others are close behind us, and if we falter or fall we shall lose our position.

In membership we are in the lead, but our plan for increasing our numbers has attracted attention everywhere, and Pennsylvania, Ohio, Michigan, Iowa, Wisconsin, Kansas, Oklahoma, Washington and California are preparing to follow us, while several other states have taken some preliminary steps in this direction.

Our membership last year was given at 1,500, and at the time of writing this I am informed by the secretary that this year's list will be as long or longer than last year's.

When we consider that this means actual paid-up, active members, and that names are promptly dropped from the roll if dues are not paid, it is a source of great satisfaction, and should encourage us in the work of making the Illinois State Dental Society the biggest and best thing of its kind anywhere.

Our program this year is a full one and commends itself for its well balanced proportions, dealing as it does with all phases of the profession, from the romance of the past to the realities of the present.

With such a feast before us we are in danger of mental dyspepsia unless we take plenty of exercise, and so I invite every one, whether member of this Society, visitor from some other state, or medical man who may be present, to take part in the proceedings and avail himself of all the privileges of the floor.

Perhaps we do not feel as free as we should in taking part in the discussions of the papers. If there has been any formality in the past in this respect let us banish it at this meeting, once and forever. Let each one feel that his views on any subject are just as deserving of a respectful hearing as the opinions of anyone else, that he is not obliged to agree with everything that is said, and that he has a right to say so.

In this spirit, let each one take any criticism on his remarks kindly, according to the other fellow the same liberty he claims for himself. If we govern ourselves by this rule our discussions will be worth while; they may possibly be hot with spicy repartee, but will always be flavored with generous good fellowship.

One of the good results arising from the meetings of the local societies is that members become accustomed to the sound of their own voices, and are therefore less timid in speaking before an audience.

In this way the local organization is a training school for the state society, and some are likely to become prominent in state work who took their first lessons in the local association.

With your permission I offer two suggestions which may or may not be worth your consideration.

The first refers to the formation of study clubs in the component societies. The plan heretofore adopted has been for the state society to furnish each component society with a good man who would attend one regular meeting and give a lecture, a clinic, or both.

This is excellent as far as it goes, but in the study club a certain subject is chosen—cavity preparation, inlay, filling, or what not,—and each member of the class does the same operation, directed and criticised by the instructor.

In this way every one is compelled to do the actual work himself, which is far better than watching some one else do it, and it seems to me that if the study club idea could be combined with the meeting of the local societies a much greater interest would be aroused, better dental operations would result and the dental millennium would not be so far in the distance.

"This were a consummation devoutly to be wished," as it would make of each component society a sort of post graduate school for the benefit of the members, and incidentally of the long-suffering patients.

My other suggestion has reference to the appointment of a committee on new remedies, or dental therapeutics, if you will.

Fine work has already been done by Drs. Harlan, Peck, Buckley, MaWhinney and others, but each man has acted independently, having little if any reference to the work of any one else.

How would it do to have a committee whose duty it would be to gather data, examine and report upon new drugs and preparations each year, condemning those which were worthless and recommending those possessing merit, so that the average man could take advantage of the knowledge gained by the committee and be saved many possible failures through the use of preparations extolled by the makers as wonderful therapeutic agents.

Would not the report of such a committee make interesting reading, and be a great help to the country practitioner, who is annually inundated with alluring pamphlets urging him to try for wonderful results Dr. Puffem's particular pain killer?

How many of us can truthfully say that we have never been misled by some smooth agent who has sold us something which we never heard of before, did not want, and were afraid to use? The report of such a committee as this might have saved us both dollars and dismay.

A recent essayist before the American Medical Association commends a couple of popular periodicals for the stand they have taken regarding patent medicines. He calls upon the boards of dental examiners in the various states to appoint a committee to consider misleading and untrue advertisements of nostrums, and exclusive and original methods of operating, and to publish a report for the benefit of the general public.

It seems to me that a committee appointed by a state society would accomplish more than one chosen by the national board of dental examiners. Why not have Illinois take the lead in this, as she has in so many other directions?

Our own board of dental examiners has done good work this year, and the local societies can assist them greatly by co-operating with them in the work of weeding out illegal practitioners.

The board can not be expected to furnish witnesses, but the local societies can, if they will, and the state will do the rest. One local society, at least, has done this, and has secured the conviction of a most notorious charlatan, who for many years defined the law, simply because no concerted co-operative action was taken against him.

Our time is short and we shall not pass this way again. So, my brethren, "Look not mournfully into the past, it comes not back again. Rightly improve the present, it is thine. Go forth to meet the shadowy future without fear, and with a manly heart."

WHAT DO WE KNOW REGARDING THE BLOOD SUPPLY TO THE TEETH; WITH SPECIAL REFERENCE TO THE GENESIS OF THE SUBJECT.*

BY I. N. BROOMELL, D. D. S., PHILADELPHIA.

It is not the object of this paper to take up the subject of the microscopic arrangement of the blood vessels in the teeth or tooth germs. Considerable controversy has existed and exists at the present time as to whether the enamel organ is vascular or otherwise. Those who say it is, claiming a certain arrangement of the capillary loops, and that certain cells are vascular while others are not. Others have given much study to the distribution of the blood-vessels in the pulp, the alveolo-dental membrane, etc. Instead of dealing with these matters, it is proposed to consider the way in which the blood reaches the teeth, the foundation for such investigation being based upon the results accruing from a number of gross dissections, being, therefore, macroscopic rather than microscopic.

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*Read before the Chicago-Odontographic Society February 18, 1908.

For several years the writer has been impressed with the idea that the blood supply to the teeth was something different from that which has always been accepted. This thought first presented itself some years ago while a series of dissections were under way, primarily intended for the purpose of the macroscopic study of tooth development.

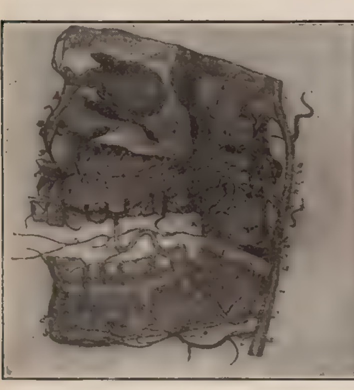
The generally accepted belief regarding the nature of the vascular supply to the teeth is that there is given off from the maxillary artery in the upper jaw, and the mandibular artery in the lower jaw an individual arterial twing, one for the root of each tooth, and that these pass directly from the main artery to the root apices, and that these gain access to the pulps through foramina in the root ends.

It has always been claimed that such an arrangement as this exists not only in mature teeth, but also in young growing teeth, some authorities going so far as to state that the individual tooth follicles in the embryo and young subject are supplied with blood in this way. It is my purpose to take exception to these long-established views, and I make the statement that they are incorrect only after very extended and careful consideration. In other words, the blood supply to growing teeth, as well as to those fully developed, is not by a single separate arterial twig from the main artery, but by some other arrangement, the exact nature of which is not understood, and which will serve the basis of further investigation.

The illustrations to be shown are mostly made from a number of dissections upon human jaws, as well as from the jaws of the calf, sheep and ox.

While the work of dissection proceeded upon embryonic and young growing teeth, it engendered the belief that the nature of the blood supply to the tooth germs and to the crowns and developing roots of young teeth, is vastly different from what has been accepted, but the efforts to prove the fallacy of this accepted belief in regard to teeth with their roots formed, or what may be improperly called completed teeth, has not been an easy task, and even now some doubt exists in the mind of the writer as to what this really is.

In order that the subject may be clearly presented, attention will first be called to some diagramatic illustrations, taken from text books, old and new, which show the blood supply to the teeth in the young, as well as in the mature subject. In "Harris' Principles and Practice of Dental Surgery," 1858, this illustration, Fig. 1, is found, and included in the description of the same the following words appear: "The inferior dental artery passes along the dental canal beneath the roots of the teeth, sending up a twig to the aperture of each root." Wilson's Anatomy of about the same period, in describing the Inferior Dental Artery, speaks somewhat vaguely of the supply to the teeth, as follows: "It supplies the alveoli and teeth of the lower jaw, sending small branches along the canals in their roots," no comment being made as to how these branches reach the teeth.



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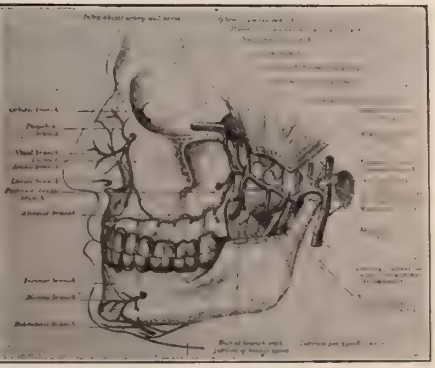


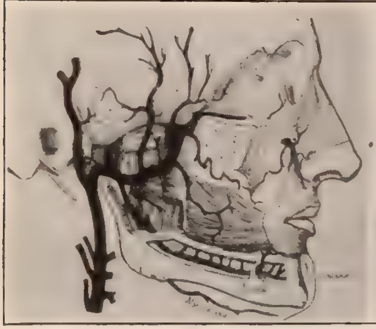
2.

Fig. 1. Blood supply to the teeth, according to Harris.
Fig. 2. Blood supply to the teeth, according to Morris.

Fig. 2 is taken from the last edition of "Morris' Human Anatomy," being described in part as follows: "The inferior dental artery passes along the canal in the interior of the bone and gives off branches to the molar, bicuspid and canine teeth."

This diagramatic illustration is in a sense incorrect, even though the supply of blood to the teeth is in general as here shown, giving as it does an impression that there are three roots to the lower molars and two to the lower bicuspids.

Fig. 3. The next illustration from DaCosta's most recent work is described in part as follows: "The inferior dental artery courses through the substance of the bone and gives off a few twigs which are lost in the cancellous tissue and a series of branches which correspond in number to roots of the teeth," the inference being that these pass from the main artery to the root apices. Here again the illustration is misleading and confusing as there is but a single branch for each of the eight teeth.



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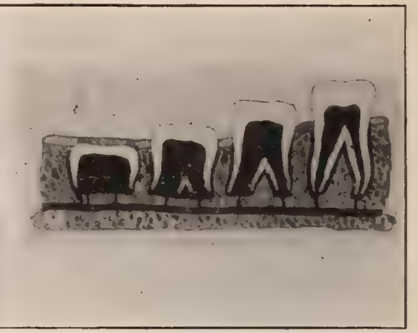

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Fig. 3. Blood supply to the teeth, according to Da Costa.
Fig. 4. Constant's theory in regard to the blood supply to the growing teeth.

In "Regional Anatomy of the Head and Neck," by Eckley & Eckley, of your own city, is indefinite, perhaps intentionally so. It says: "The inferior dental (artery) accompanied by a nerve of the same name enters the mandibular canal and is distributed to the teeth and gums of the mandible and to the skin of the chin."

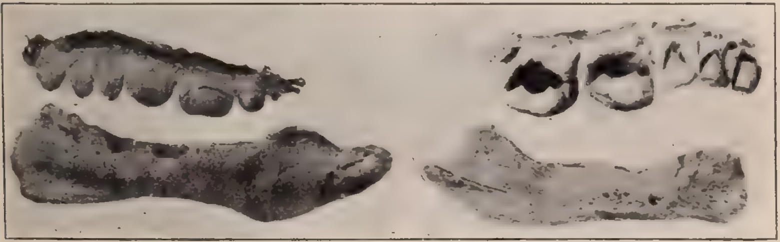
It will be seen, therefore, that in a general way all of these authorities practically agree as to the ultimate mode of a vascular supply to the teeth, saying nothing in regard to the distribution of the blood to developing teeth.

Permit me to next introduce a drawing, Fig. 4, by Constant, so frequently used in text books to illustrate his theory that the blood pressure is responsible for the elevation or eruption of the teeth. To this arrangement of the blood supply at this time I take most emphatic exception, and I hope to be able to prove that no such arrangement of the blood vessels as that shown in the diagram exists in connection with young or partly developed tooth crowns. While the blood pressure may and likely does exert a controlling influence over the eruption of the teeth, it is not by any such simple arrangement as that here shown by Constant.

In addition, I quote and take exception to the remarks of W. Lepkowski: "In the fœtus of seven months the alveolar artery provides one branch for each tooth germ which is thus entered at its base." Also to Hopewell Smith, who says in discussing the subject of the blood supply to the developing tissues: "In the dentine organ the pulp has by far the largest and most important system of blood vessels. Here one blood vessel enters," etc.

I believe that no apology is necessary for introducing at this time a few old slides made from a series of dissections upon human embryos and originally used in the study of the follicular stage of tooth development. This should be especially permissible, because it was while these dissections were being carried on that the thoughts included in this paper were first presented to the author.

Fig. 5 shows a dissection made upon the mandible of a four months' embryo, the object being to separate all of the soft tissues from the growing bone. In making such a dissection as this for the purpose intended, it is essential that the incision be made deep enough to include the periosteum; otherwise, the tooth follicles will be more or less mutilated, in attempting to lift them from their bony encasements.



5. 6.

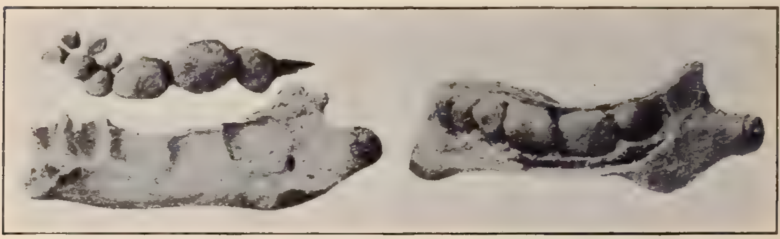
Fig. 5. Mandible from fetus—fourth month. Tooth follicles lifted from bony sockets.
Fig. 6. Mandible with follicles, dissected out. Sixth embryonic month.

The illustration shows the dissection complete, the bone and soft tissue being separated, and in this we have the first opportunity to introduce the essential feature of the subject under consideration, which is the following:

In this stage of the process of tooth development there is no evidence of a connection between the inferior dental artery already located in the substance of the bone and the growing teeth. That is, there is no such condition present as described and diagramatically illustrated by Constant.

It may be argued that the process of growth in the teeth has not advanced sufficiently to expect the distribution of a special arterial branch to each tooth follicle; or, it may be said that these branches are present at this time, but that they have been broken off during dissection.

To contradict the former, this slide, Fig. 6, is introduced, and it will be seen that the crowns of the teeth are advanced to a stage fully equal to those showing the early stages in Constant's diagram; while the next slide, Fig. 7, shows the base of the follicle, as well as the bottom of the crypts from which they have been dislodged. Yet there is no evidence in the picture of the passage of blood vessels from the main artery to the individual teeth, but there is evidence of a generous distribution of blood through the walls of the follicle.



7 8.

Fig. 7. Mandible with follicles dissected out. The specimens are turned to show the bases of the follicles and bottoms of the crypts.

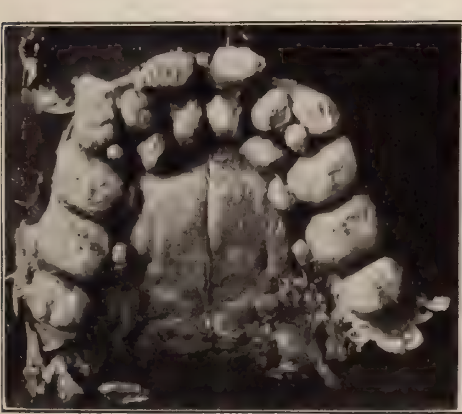
Fig. 8. Mandible of child one month after birth. Crowns calcified at this period. Dissection shows follicles and discloses mandibular canal.

I might pause here to explain that with the most careful search instituted at the time of making the dissections, there was not the slightest evidence of a blood supply being given to the follicles from the main artery.

Fig. 8 shows the mandible from a child one month after birth, at which time crowns of the deciduous teeth here shown in their follicles are fully calcified. The inferior dental canal devoid of its contents is shown and the relationship between it and the tooth follicle is plainly evident. Even at this stage of the general development of the parts, no vascular communication has been established between the main artery and the teeth.

Fig. 9 shows a dissection upon the upper jaw of a young child, exposing to view the follicles of both the deciduous and permanent teeth.

Fig. 9 shows a similar dissection made upon the lingual side of the mandible of a child seven or eight months after birth, with the roots of some of the teeth calcified to a considerable extent. Yet even at this advanced stage, there is no evidence of a direct arterial supply from the main artery.



9.

10.

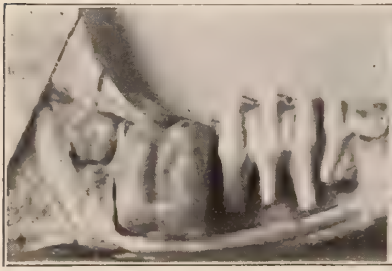
Fig. 9. Tooth follicles from a child three months old. Basal view.
Fig. 10. Schematic diagram of blood supply.

Up to this time we have considered the genesis of the blood supply to the teeth as we claim it is *not;* therefore, it will be well to introduce here some theories as to what we believe it to be. To make the subject more readily understood this diagrom has been hastily prepared, Fig. 10, representing the established theory of Constant and others. "B" shows the real conditions as found by the writer in the numerous dissections made. "C" shows the Constant theory. In the latter, the blood supply is seen to come from below by a single arterial twig. In the former, it is shown as coming from above by many minute vessels which arise in the peridental tissue and find their way into the pulp after coursing through the walls of the dental follicle.

In this connection it is well to recall the fact that the separate tissues of the developing teeth and the connective tissue walls surrounding them are supplied with separate sets of vessels. That is, those tissues of epiblastic origin are supplied by a superficial set of vessels, while those of mesoblastic origin which includes the walls of the follicle and the dentin papilla are supplied by a separate and distinct deep set of vessels. It is also known that with the transformation of the walls of the follicle into the alveolo-dental membrane there is established a free anastomoses between these two sets of vessels, and not until that time is the permanent vascular supply to the teeth fully shown.

With the establishment of the alveolo-dental membrane "it is a simple matter to find numerous off-shoots from the capillaries of the alveolar bone running toward the cementum and forming thick plexuses with the other two."

Not being content with the dissections just shown and to more fully establish the theory here advanced, I have recently made some dissections upon the jaws of the calf, sheep and ox, the results of which will now be shown:



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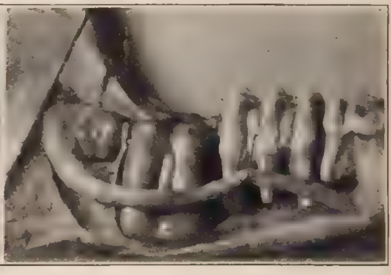


12.

Fig. 11. Mandible of calf showing mandibular sheath and developing teeth dissected out No communicating vessels between sheath and teeth.

Fig. 12. Same as 11, with common sheath pulled out from the canal.

Fig. 11 shows a dissection upon the molar region of the mandible of a calf which exposes to view some teeth well developed and others yet in the follicular stage. The mandibular canal is laid open and the common sheath is shown.

It will be noticed that while the sheath is in very close relationship to the base of the developing teeth, that there are no communicating vessels between the main artery and the follicular wall, this applying as to the molar with its entire crown calcified, as well as to the youngest tooth in which no calcification has taken place. The large follicle is dislodged from its crypt, this being done without the rupture of blood vessels, which could not be the case if they existed as described by Constant.

Fig. 12 shows the common sheath pulled out of the canal and serves further to prove the theory that there is no connection between it and the growing teeth. No force was exerted in withdrawing the sheath from the canal, the same falling out almost of its own weight.

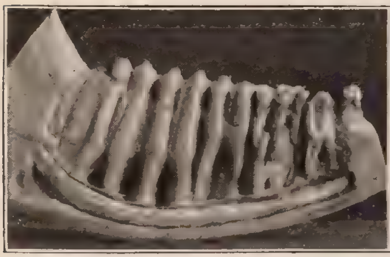
While no attempt has been made to study the subject from microscopic sections, is it not strange that out of the thousands of longitudinal sections made of developing teeth and tooth germs and their associated parts not one of these, so far as my observation goes, includes the walls of a vessel passing from the main artery to the root apex or base of the papilla? We see the main artery in transverse section near by, but the connecting vessel is always absent.

It may be said that these blood vessels are not of sufficient size to be observed with the naked eye and that microscopic sections should be depended upon only for a general study of the subject. These thoughts occurred to the writer, and for this reason some dissections were made on the mandible of an ox. In this the common sheath carrying the blood vessels and nerves of the mandibular canal measures three-quarters of an inch in diameter, and the lumen of the artery proper measures about three-sixteenths of an inch.

Hopewell Smith claims that the blood vessels of a human cuspid pulp are macroscopically visible, and if this be so, they would be proportionately larger before entering the pulp, and very much larger in a jaw having the dimensions of those of an ox.

Fig. 13 shows a dissection made upon the facial side of the mandible of an ox and shows the teeth and roots quite mature. As in the previous illustrations, the mandibular canal is laid open and the common sheath exposed to view. We might naturally assume that if the direct blood supply is to be found, it should be seen in this mature specimen, but the most careful manipulation failed to substantiate the theory that such a condition exists. There is, however, in this more or less perfected specimen, a rich supply of vessels coursing to and fro through the cancellated tissue and may by the careful removal of the preformed matrix be seen to pass from alveoli to alveoli.

The next illustration, Fig. 14, shows the same specimen with the common mandibular sheath dissected away, exposing to view the artery, the same having been previously carefully injected. While several minute branches are given off, these do not correspond in position or number to the root apices.



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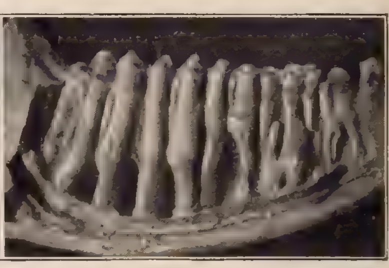


14.

Fig. 13. Dissection of mandible of an ox. Mature teeth and roots. No vascular communication directly from common sheath and root apices.

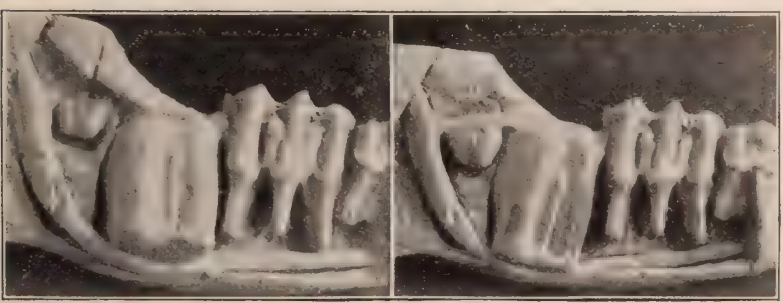
Fig. 14. Same as Fig. 13, with the common sheath dissected away. Injected artery xposed to view.

In an examination of what might be called the "roof" of the mandibular canal, the same being in immediate contact with the root apices, no vessels are seen to penetrate it in locations corresponding to these.

As stated elsewhere in this paper, my belief is that during the follicular stage of development, the papillæ or future pulp is supplied by vessels which reach it after coursing through the walls of the follicle.

Fig. 15 shows these vessels in the walls of the follicle after being injected, this injection having been made into the mandibular artery, and having reached the minute vessels in the walls of the follicle, the query naturally presents itself as to how this could be brought about if there was no connection between the two? This complication prompted a further dissection, the results of which are shown in Fig. 16.

Here we have shown a condition which would practically seem to prove the theory advanced. A secondary sheath given off from the main sheath and passing forward over the crowns of two developing teeth, and providing in this way a vascular supply to these follicles. Inasmuch as this sheath could not be traced beyond the two follicles shown, it is natural to believe that it has but a transitory existence and that it atrophies soon after the eruption of the teeth. It must be borne in mind that this sheath is not a part of the gingival tissue, but has a separate and distinct existence, forming a canal for itself in the upper portion of the ramus of the jaw.



15. 16.

Fig. 15. Vessels in follicles injected.
Fig. 16. Showing secondary sheath passing over both follicles and providing a temporary blood supply to those parts.

CONCLUSIONS.

First—The blood supply to the dental follicles and growing teeth differs from that of the completely formed teeth in the mode of its general distribution. That is, while a blood vessel or single arterial twig may enter the apical foramen in the fully developed tooth, passing directly from the main artery in doing so, the blood supply to the tooth previous to this time is, as described, from the walls of the follicle, independent of the main artery.

Second—The theory of Constant and others regarding the genesis of blood supply to the teeth is erroneous.

Third—The teeth are supplied with blood by branches from the main maxillary arteries, but this supply is received through the numerous common vessels which traverse the cancellated bony tissue of the jaw and the alveoli, forming a free anastomoses, some of the vessels of which enter the pulp through the root apex.

DIAGNOSIS AND TREATMENT OF CERTAIN ACUTE DESTRUCTIVE DISEASES OF THE DENTAL PULP.*

W. H. G. LOGAN, M. D., D. D. S., CHICAGO, ILL.

The purpose of this paper is to create, if possible, a greater interest in the more exact diagnosis in some of the various acute destructive diseases of the dental pulp, for if one always knew the true meaning of each clinical symptom or combination of manifestations resulting when the pulp is irritated, the number of alveolar abscesses could be greatly reduced, provided the operator does his full duty by removing this pulp when the patient presents himself with the organ in such a pathologic condition that at the most only a short duration of life to the tissue is possible. It seems to me that it is best to devitalize or anesthetize and remove that pulp when it is yet alive and in an aseptic inflammatory state, if such an opportunity presents itself, instead of waiting for it to die of its own volition with the possible and probable accompaniments of ulceration, abscess formation, or putrescence of the pulp and ultimate involvement of the adjacent apical tissues. The paper will not, however, contend that all irritated pulps should be removed for fear they may die, but shall maintain that all pulps should be removed for fear of subsequent effects when an intelligent reading of the findings presented surely inform us that this pulp will soon die as the result of the tissue changes that have already occurred in this organ. Perhaps the reading of a brief poem that acted as a psychologic impulse in my deciding to write a paper upon this subject may best show the sentiment and ideas behind the essay. The poem is entitled, "The Fence or the Ambulance," and runs like this:

'Twas a dangerous cliff, as they freely confessed,
    Tho' to walk near its crest was so pleasant,
But over its terrible edge there had slipped
    A duke and full many a peasant.
So the people said something would have to be done,
    But their projects did not at all tally;
Some said, put a fence round the edge of the cliff,
    Some, an ambulance down in the valley.

But the cry for the ambulance carried the day,
    For it spread through the neighboring city;

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*Read before the Chicago-Odontographic Society, March, 1908.

A fence may be useful or not, it is true,
    But each heart was brimful of pity
For those who slipped over that dangerous cliff
    And the dwellers in highway and valley
Gave pound or gave pence not to put up a fence,
    But an ambulance down in the valley.

For the cliff is all right if you're careful, they said,
    And if folks ever slip or are dropping,
It isn't the slipping that hurts them so much
    As the shock down below when they're stopping.
Then an old sage remarked, "It's a marvel to me
    That people give far more attention
To repairing results than to stopping the cause
    When they'd much better aim at prevention.

"Let us stop at its source all this mischief," cried he,
    Come, neighbors and friends, let us rally;
If the cliff we will fence we might almost dispense
    With the ambulance down in the valley."

"Oh, he's a fanatic," the others rejoined,
    Dispense with the ambulance?—never!
He'd dispense with all charities, too, if he could,
    No, we will protect them forever.
Aren't we picking folks up just as fast as they fall?
    And shall this man dictate to us? Shall he?
Why should people of sense stop to put up a fence
    While their ambulance works in the valley?"

But a sensible few who were practical, too,
    Will not bear with such nonsense much longer;
They believe that prevention is better than cure,
    And their party will soon be the stronger.
Encourage them, then, with your purse, views and pen
    And while other philanthropists dally,
They will scorn all pretense and put up a stout fence
    On the cliff that hangs over the valley.

As I read this poem the thought came that our profession for the last ten or fifteen years had given more attention to the therapeutic equipment and maintenance of its ambulance corps, than to the consideration of the intelligent building of a fence in the form of proper diagnosis about these diseased pulps that would decrease the number needing the kind of treatment that has been outlined and accepted by the profession as appropriate in cases of septic and putrescent conditions by such eminent therapeutic writers as Drs. Inglis, Rhein, Kirk, Buckley, Cook and MaWhinney.

Now, the endeavor to differentiate between the conditions found in the dental pulp without having the tissue placed under a microscope following that diagnosis, for verification, is a question that is rightfully open to discussion, and although that work has been accomplished I do not feel that my statements can be looked upon as final when I affirm that a pulp, if the seat of such a disease, will undergo such certain definite tissue changes that will cause it to die in a short period, even though given every therapeutic aid, because conclusive proof of such statements could only be established by first agreeing to the etiology, the symptomatology, diagnosis, and tissue changes that have been claimed to have occurred. The next step must be the extraction of the tooth during a period of pain so as to obtain the tissue in its fully abnormal state. Then if specimens under the microscope verify our diagnosis of tissue changes, we have yet fallen far short of our proof that this pulp would have died in a short time even under the most favorable conditions that could be placed about it. And on the other hand, if on diagnosing a certain condition of the pulp as a given disease, that under a certain line of treatment it would continue to live, and if time proves our assertion, the designing critic can yet say that the pulp was not involved to the extent claimed, or it would have died.

But dropping such hypercritical thoughts, and holding, as Dr. Louis Jack[1] says: "In the treatment of an organ that cannot be brought under ocular inspection, the chief guides to determining its state are the apparent conditions viewed in connection with the symptomatology of the case under treatment." So in view of these facts I have considered my subject from a clinical standpoint along with the symptoms and tissue changes that I believe have an all-important bearing when we are called upon to decide whether a pulp should or should not be removed.

Assuming that we all agree that every necrotic and infected pulp should be removed if the tooth is to be conserved for any definite period, I shall not discuss these conditions or endeavor to outline their appropriate treatment, but confine myself to the discussion of, (1) acute and passive hyperemia, (2) acute partial and total non-septic pulpitis.

(3) When is pulp-capping indicated?

The first acute destructive disease of this organ that we shall discuss is acute active hyperemia, and since correct therapeutics must depend upon correct diagnosis, and holding that a comprehensive knowledge of the pathologic changes that occur in diseased tissue is essential for their correct diagnosis, I shall include in this paper the etiology, pathology, diagnosis, prognosis and treatment of each disease.

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[1] American Textbook of Operative Dentistry, by Edward C. Kirk.

ACUTE ACTIVE HYPEREMIA, WITH ITS ETIOLOGY, PATHOLOGY, DIAGNOSIS, PROGNOSIS, AND TREATMENT.

By active hyperemia of the dental pulp I mean an irregular dilatation of the arteries that contain an excessive amount of blood. This active hyperemia of the pulp may be brought about by the application of any local irritant, or the presence of such systemic diseases as will momentarily allow the calibre of the pulp-arteries to be increased. Active or arterial hyperemia of the pulp arising from the increase of the afflux of blood may be either idiopathic or collateral. [1]The first of these plays the more important role, since it depends upon a relaxation of the muscular tunics of the artery, which may be brought about by either paralysis of the vasoconstrictors, which is neuro-paralytic hyperemia, or through a stimulation of the vasodilators, resulting in a neurotic hyperemia, or through direct weakening and paralysis of the arterial vessels (as, for example, from the sudden bathing of a tooth with extreme cold or hot applications, from the systemic action of such drugs as atropin, and from prolonged illness we sometimes find a decrease of the external pressure exerted upon the pulp vessels, with the resulting phenomena of active hyperemia occurring). Collateral active hyperemia is the result of a decreased flow of blood to some other part of the body sufficient in amount to cause an increase in a local area that has had its normal vitality lowered from previous irritation or from imperfect nourishment.

Having considered some of the obscure causes arising from systemic diseases that result in characteristic pain in active hyperemia of the pulp, I will now describe the more usual forms of local irritation and the conditions that allow these to occur. From the gradual destruction of the protecting wall of dentine and enamel by dental caries or accident, or the placing of metal fillings in close proximity to the pulp, we have in either case here established the opportunity of easy irritation of the pulp by thermal changes, which is the most frequent and direct cause of the first periods of pain that occur in active hyperemia, for we here find the ideal opportunity for the application of irritants that will cause loss of control of the vasomotor nerve supply to these arteries and capillaries. As farther examples of such irritation as may cause this loss of arterial control, the momentary wedging of food against a thin wall of dentine, the leaving of unsterilized dentine between the filling and the pulp, and the presence of an alveolar abscess about one tooth frequently results in collateral hyperemia of the pulp of an adjacent one; the presence of lateral or apical non-septic pericementitis that results from over-malleting or the wedging of food between the teeth.

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[1] Stengel after Ziegler.

Diagnosis of Acute Active Hyperemia of the Pulp.—Although any one factor or combination of these factors may produce the disease, it is in the application of heat or cold or the sudden impact of food whereby we have produced the characteristic diagnostic signs of this disease. And those important characteristic diagnostic symptoms of acute active hyperemia will be found in the fact that the pain only occurs when irritation is applied and is of but a few moments' or minutes' duration at the most. The paroxysm of pain subsides without treatment and such pain not occurring again until the application of another irritant. The period of such irritation is usually during the time of eating or drinking cold or hot food or fluids, or when exposed to cold drafts. The periods and character of pain are as stated, provided the irritants causing the pain be those named, but if the irritant is the wedging of food that acts the same as a filling that is inserted in such a manner as to cause constant pressure from the bending in of a thin intervening wall of dentine, our pain becomes paroxysmal in character and subsides for only a short period to occur again, for the reason that here the application of an irritant is constant, and this disturbance does not cease until the pressure is removed, and if the pressure is not removed the condition soon changes from hyperemia into that of pulpitis by a process that we shall describe later.

If these statements in reference to the symptoms be true, we should not expect active hyperemia to begin only in exceptional cases without the application of a definitely known irritant. And so the rule is that active hyperemia exists in a pulp when the pain begins with a known irritation, lasting for a few moments, or minutes at the most, and subsiding without treatment and not starting again until the application of another known irritant is made.

Prognosis of Acute Active Hyperemia of the Pulp.—With such a record and no previous history of there ever having been pulp pain in the tooth before, and if upon examination we find an intervening wall dentine between the cavity and the pulp that will allow of appropriate cavity preparation and the leaving of even a thin wall of solid normal dentine overlying the pulp, I should always expect that in every case where I did my duty the pulp would return to normal after one or two treatments and remain so as long as the tooth received proper care.

Treatment of Acute Active Hyperemia.—After partially preparing the cavity by any plan that results in the removal of the greater portion if not all of the carious dentine, wash out this cavity with warm, mild antiseptic solution, then put the rubber-dam in position and place a pellet of cotton moistened with 95 per cent phenol into the dried cavity, leaving it for a brief period; then remove the phenol and desiccate the dentine with absolute alcohol and warm air, after which place oil of cloves on cotton in the cavity and retain this remedy with cement if our cavity is one that is subject to occlusal stress. When the cavity is not so placed, gutta percha or Gilberts's stopping may be substituted. Dismiss the patient for one week with directions to report sooner if symptoms become more frequent or of longer duration.

If upon the return of our patient he reports no disturbance for the last two or three days, I would proceed to insert the permanent filling. If deep caries is present, a cavity lining should first be placed beneath the filling.

If the case under treatment has grown worse instead of better, the periods of pain coming without irritation as well as with it, I would change my remedy from oil of cloves to the one outlined as appropriate for treatment of favorable cases of acute passive hyperemia and acute non-septic partial pulpitis.

Passive Hyperemia With Its Etiology and Pathology.—Passive, or venous, hyperemia of the pulp arises as a result of some interference that is sufficient to cause a thickening of the vein-wall or the formation of a thrombus that will obstruct the return circulation of blood from these tissues through the veins. The frequent occurrence of retardation of the flow of venous blood from the pulp may be due in part to the histologic make-up of this tissue, and from Dr.

F. B. Noyes[1] we learn that the walls of the blood-vessels of the pulp are made up as follows:

"A very striking peculiarity of the blood-vessels of the pulp is the thinness of their walls, even the large arteries showing scarcely any condensation of fibrous tissue around them to form the usual adventitious layer, and usually containing but a single involuntary muscle fibre representing the media, while the walls of even the larger veins are made up of only the single layer of endothelial cells forming the intima and are in structure like capillaries. This peculiarity of the blood-vessel wall is of great importance, as it renders this tissue especially liable to such pathologic conditions as hyperemia and inflammation."

Since the pulp veins do not have a normal sheath, the escape of blood elements through the vessel walls easily follows when the damming back of the blood begins in the vein by the obstructing thrombus. This thrombus remaining, the first result will be seen between it and the capillaries, the flow becoming slowed or stopped temporarily, and when total stasis results necrosis of the pulp follows. But as a rule venous hyperemia of this organ only occurs after we have had a history of active hyperemia preceding it. Some of the exceptions to this statement will be considered under diagnosis.

In active and passive hyperemia, both the tissue pressure and tissue tension are increased. Therefore, although we may have an embolus deposited or a thrombus present that interferes with the outflow of blood, we must take recognition of nature's aid that accompanies active and passive hyperemia in the increase of tissue pressue that causes a progressive filling of the vein from the constant influx of blood from the arteries through the capillaries into the obstructed vein or veins. If the obstructing thrombus is not quickly overcome by the increased tension and pressure, or cared for by collateral circulation, we find transudation of the fluid elements of the blood and diapedesis of the red blood corpuscles into the very limited tissue spaces of the pulp outside the stream, occurring. Where the pathologic involvement has been extensive enough to cause prolonged circulatory disturbances, these are creative of sufficient transudation of plasma and diapedesis of red blood cells to cause pain to arise of considerable duration and the paroxysms becoming more constant to the point of the patient not being free from disturbance between these periods. When such pain results the pulp is so extensively involved with the disease of passive hyperemia that I do not believe its return to normal for a sufficient length of time is possible to make it worth the effort to save the pulp, unless some exceptionally favorable circumstances exits about this tooth.

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[1] American Textbook of Operative Dentistry, Kirk.

The diagnosis of the condition of passive hyperemia that has only progressed to an extent that makes prognosis and treatment usually favorable, will be considered with the diagnosis and treatment of acute partial non-septic pulpitis.

ACUTE PARTIAL NON-SEPTIC PULPITIS, WITH ITS ETIOLOGY, PATHOLOGY AND PROGNOSIS.

An acute partial non-septic pulpitis is a true inflammatory involvement of a small area of the pulp. The portion of the pulp that at first undergoes inflammatory changes is as a rule the area that receives the burden of the shock when irritated. For example, if one horn of the pulp is nearer approached by dental caries, that portion is first to take on the characteristic inflammatory tissue changes.

ETIOLOGY.—History of a previous acute and slight passive hyperemia, with or without large fillings present, or a slight exposure of the pulp, these giving opportunities for constant application of thermal changes, etc. The pathology of acute partial non-septic pulpitis follows the formation of a blood clot in the vein or veins of the pulp, found in passive hyperemia. If inflammation is to follow, certain changes beyond those characteristic of passive hyperemia must take place. The presence of the thrombus retarding or obstructing the outgoing blood, causes an increased pressure on the distal side of the obstruction, with a loss of normal control of the influences that regulate the calibre of the vessels, the veins gradually dilate, increasing the size of their tissue spaces and allowing of the characteristic easy influx of fluid blood elements into the perivascular tissue, an exudate that always coagulates if inflammation occurs, *and this coagulation of the escaping fluid elements of the blood found in the perivascular tissue is the line of demarcation between passive hyperemia and any inflammatory process of the pulp.* Emigration of the white cells and diapedesis of the red cells take place with the exudation of the fluid blood elements. This escaping exudate is always small in amount in inflammations of the pulp because of its bone-like encasement, unless at some point in the pulp-chamber there be a considerable exposure of the organ.

Diagnostic Symptoms of Passive Hyperemia and of Acute Partial Non-Septic Pulpitis That Will Warrant Treatment With the Idea in View That This Pulp Will Live.—Pain, intermittent, the paroxysms lasting from five to thirty minutes. Pain will come without irritation as well as with it. Where the period occurs without irritation more than once or twice in twenty-four hours, I would not, with rare exceptions, endeavor to save the pulp, providing that the time of this return of such pain without irritation is at night. Slightly sensitive to both heat and cold. Pulp perfectly comfortable between periods of pain. Extreme irritation causing pronounced results with the paroxysm subsiding in five to thirty minutes without treatment. The patient may or may not be able to locate the offending tooth.

My conclusions that these pulps may live beyond those of clinical experience and pathological investigation are based upon the findings recorded by Dr. G. V. Black in an article printed twenty-two years ago in the American System of Dentistry, edited by Litch, and if one but stop to consider the meager amount of crystallized knowledge on this subject at that early day, he must admit that this essay on the pathology of the dental pulp by Dr. Black is a master article by a master mind; and while he was discussing the recuperative power of an inflamed pulp, he said: "It seems to me that these facts show that the dental pulp has considerable power of recuperation from an inflamed state, for it is certain that the moderate extravasation of blood is disposed of successfully, and that a considerable bulk considering the size of the organ of inflammatory lymph is tolerated without destroying it, and would undoubtedly be disposed of by the tissue if the case was placed under favorable conditions."

Before outlining the treatment indicated where we expect to save these questionable pulps, I wish to affirm that such efforts are apt to prove futile unless the patient is one that enjoys good health and of his own accord gives his teeth exceptional care, and is regular in having his mouth examined by the dentist.

Treatment of a Favorable Case of Passive Hyperemia or Acute Partial Non-Septic Pulpitis, as Was Outlined by the Diagnostic Symptoms of a Favorable Case for Treatment.—The remedy that I use most frequently in this class of cases was presented to the profession by Dr. J. P. Buckley, and termed, Modified Phenol, and its component parts are:

℞	Menthol,	ʒj
	Thymol,	ʒij
	Phenolis, q. s. ad.,	fliij

M.

Note: Heat the phenol and slowly add the menthol and thymol.

Sig. Use as directed.

The remedy that I formerly used exclusively, and sometimes now employ instead of the modified phenol, is equal parts of oil of cloves and phenol.

In the application of either of these remedies the same technique is followed as outlined in the care of acute active hyperemia, with the exception that this pulp will not be in a sufficiently normal condition to warrant the insertion of a permanent filling in such a short time. Although I dismiss the patient for one week, my rule is that if the condition does not greatly and gradually improve he must return and have the application changed, not because of lack of faith in the remedy, but for fear I have not properly retained it, or perhaps I have caused pressure on the thin dentinal wall overlying the pulp by faulty technique while retaining the remedy, or by the leaving of the retaining substance so high that pericementitis is resulting; and another accident that may occur in the treatment of this pulp from our eagerness not to cause pressure, is that we sometimes fail to perfectly contact our cement or gutta percha at the margins of the cavity.

TOTAL ACUTE NON-SEPTIC PULPITIS WITH ITS ETIOLOGY, PATHOLOGY, DIAGNOSIS AND TREATMENT.

Etiology.—History of a previous extensive hyperemia that terminated in the passive form or of a partial non-septic pulpitis.

The pathology of total acute non-septic pulpitis is the same in kind as found in partial acute non-septic pulpitis, only differing in the amount of pulp tissue undergoing the inflammatory change.

Diagnosis.—Large fillings present or deep exposed cavities found with a previous history spoken of as venous hyperemia or partial non-septic pulpitis that may or may not have been of recent date.

If the case under consideration that is now terminating in total inflammation of the pulp has been one of recent hyperemia or partial non-septic pulpitis, we find that the frequency and duration of paroxysms of pain gradually augment as the increased blood pressure and tissue involvement occur, the paroxysms of pain lasting from one to four hours and starting with or without irritation, and the frequency of the pain increasing until it becomes almost if not quite constant. The patient complains of pain on that side of the face, but cannot always locate the tooth until the inflammatory process spreads beyond the pulp and causes apical non-septic pericementitis. This non-septic apical pericementitis begins in the average case on the third day after the total pulpitis starts, which is dating from the time the periods of pain begin to be longer than thirty minutes in duration and occurring once or twice during the twenty-four hours without irritation. The occurrence of pain is more constant at night than during the day and lasts longer as a rule than periods that come during the day in spite of the fact that the pulp is not subjected to the same amount of irritation during these hours. We find a possible explanation of this greater pain that occurs in our patients at night in that we have a slight difference in blood pressure existing in the inflamed pulp that seems sufficient in amount to cause the variation in degree of pain found. Frequently our patient presents himself with the statement: The pain became very severe soon after retiring, but when he placed himself in an upright position it gradually decreased, but soon after reclining again the same character of pain started. With such clinical facts before us, and knowing that all inflamed areas are less painful when we place the tissue of the organ above the level of the heart, we find the plausible explanation of an increased pain in extensive pulpitis at night.

If an exposure of this organ is made, it will be found filling the entire pulp-chamber to its utmost capacity, for the reason that the obstructed, dilated vessels and the exudate found in the perivascular tissue of the organ cause decided distension. This will not be the case if we open into a pulp-chamber that contains a pulp that has undergone abscess formation or ulceration, for here we find quite the opposite in no tissue being in contact with the dome of the pulp-chamber.

Prognosis of Total Acute Non-Septic Pulpitis.—When the pulp is the seat of such total inflammation as indicated, which is proved by the history of the pulp symptoms that occur and the findings that induced the perivascular tissue to become involved from a recent or previous disturbance of the pulp, I believe the proper course to pursue is to begin at once with the treatment that is to end with the removal of the pulp. I admit, however, that in many instances this pulp can be so treated that no painful response will result from the extremes of irritation, but regardless of this fact very close observation has led me to believe that such a pulp practically universally dies, either with or without pain, in the near future. The only exception to the uniform adoption of this rule of practice that the writer recognizes is when he finds this pathologic condition of the pulp in a tooth whose roots have not fully developed. The second exception to the rule is found in the treatment of deciduous teeth that are soon to be lost.

When should we endeavor to save an exposed pulp? I would not endeavor to save the vitality of a pulp permanently when the exposure of the organ has been brought about by caries, for the rule is that all exposed pulps have undergone sufficient inflammatory changes to cause their ultimate death, even when carefully capped. Nor would I expect the pulp to remain alive for long where I caused an exposure by lifting out the softened dentine with an excavator, for the reason that before such an accident could occur the carious process has been of such long standing that it has allowed so frequent an application of irritants sufficient to greatly reduce the vitality of this tissue. Therefore I would always remove such pulps if the roots of these teeth had perfectly formed.

Exposures made through healthy dentine with a bur that did not infect the pulp tissue, if properly treated will give a sufficiently high percentage of successes to warrant our attempt to save this organ if we desire to do so.

The Technique of Capping Such an Exposed Pulp.—Assuming that the rubber-dam was placed before the accident of pulp exposure occurred (for if one is working about a pulp that is nearly exposed it is almost malpractice not to have the rubber-dam on so that the field of operation will be dry and the operator's view not obstructed by the cheek or moving tongue) we may proceed to cap the pulp. Following our exposure, hemorrhage results. In the treatment of this hemorrhage I can see no harm in letting the flow of blood continue for a few moments, thus giving nature a chance to close the wound of its own accord, for I believe that a clot so formed may be more easily cared for than one that has been created by the aid of some irritating styptic. After hemorrhage ceases, remove all blood stains from the cavity with any warm, mild, astringent, sterile solution. The dentine about the exposure may be bathed with phenol (but this remedy is not applied to the pulp), the excess to be evaporated by warm air.

Mix precipitated calcium phosphate with oil of cloves to form a thick paste that is to be placed on the dentine at one side of the exposure and gently teased over the exposed pulp in such a manner as to exclude the air, allowing it to settle to place gently, and flow on top of this paste that covers the entire denine, a sufficient mix of cement, and dismiss the patient after giving him an appointment to return in either three or six months, and before if any symptoms of pain in the tooth occur.

I wish to conclude this paper with a statement that has a bearing on the general treatment of diseased pulps.

In just the proportion that a pulp needs treatment, the essayist holds that the remedy should be retained with cement, providing the cavity is exposed to occlusal stress, and in just the proportion that this pulp needs treatment do I consider gutta percha one of the worst things to retain the remedy, for the reason that the force of mastication may and frequently does carry bacteria and their by-products that are found in the dentinal tubules, together with a part of our remedies, directly through even a considerable portion of normal dentine into the pulp tissues. And before we can expect any remedy to have its full therapeutic effect, previous to its application we must remove practically all of the softened and diseased dentine that intervenes between the cavity and the diseased pulp.

THE IDEAL ATTAINED AT LAST.

A SIMPLE YET ACCURATE METHOD OF MAKING THE ORDINARY FACING AS USED IN CROWN AND BRIDGE-WORK, DETACHABLE AND REPLACEABLE.

BY DR. ROLAND JARVIS, LONDON, ONTARIO.

This method, which I shall endeavor to make plain to every one interested, is applicable only in the construction of anterior bridges and single crowns involving the six and often the eight anterior teeth.

First, I will state the several advantages gained by the use of this method.

1. The cosmetic possibilities of the finished product are increased by avoiding the display of gold incisal edges.
2. Facings are not subjected to the heat of soldering.
3. Facings are readily replaced in case of fracture.
4. Greater confidence to the operator in the finished product.
5. The intervening cement a support to the frail backing.
6. Time taken in heating and cooling is eliminated.
7. The backing is made to fit the tooth.

In the application of this method all of the facings for both crowns and dummies should be selected and ground to the proper adaptation. Each facing is then backed with 30 gauge gold but the pins are not bent or cut in any way so that later the facings can be removed from the several backings after the latter are waxed in position on the model. After the backing of the facings is completed, the backings are removed and the pins tapped or threaded, and this done, the backings are replaced again. Over each pin there is now placed a dummy non-fusible nut, the latter being an exact counterpart as far as size is concerned of a gold nut that is used finally to attach the facing. These dummy nuts are now waxed to the backings but not to the pins and all carried to alignment on the model as wanted when completed. The dummy nuts and backings, while the teeth are in position, are waxed to the model and to each other. The facings are now removed from the backings, which is easily done if no wax has been allowed to come in contact with the pins. The backings are now painted with whiting and then small non-fusible pins are pushed through the holes in the nuts and backings so that when the wax is removed later, the dummy nuts will be retained in their proper position on the backings with the pin holes in the nuts and backings in proper alignment one with the other. The case is now ready for investment, and this is done in the ordinary way. Next remove the wax, and to facilitate the soldering cut a strip of very thin gold or platinum one-half inch in length and as wide as the dummy nut is thick. Now curl this strip round some instrument that has the same diameter as the dummy nuts and then remove the curl thus made and drop it over the nut on the backing. Treat each nut in the same manner. This is done to give the dummy nuts a metal surface on their sides, so that the solder will flow easily round them. Proceed with the soldering. Cool, remove investment, and drill out the soft dummy nuts with a wheel bur. After pickling the case it is ready for the attachment of the teeth. The backings are first covered with a thin coating of cement and the facings are then pushed into place and while the cement is yet soft the small gold nuts before referred to are attached to each pin. They will fit the pockets left by the dummy nuts accurately, and after the cement has become hard the case is polished in the usual way.

This method actually takes up less time than the present one in use. There is no specially constructed facing required or no instrument that almost every dentist has not already in his cabinet. The pins are tapped with the Bryant taps and the gold nuts are driven to place by the Bryant nut driver. As to the gold and dummy nuts, they are manufactured by the London Dental Laboratory & Specialty Company, London, Ont., and can be secured from them or through the dealers in dental supplies. The cost of these nuts is so small that it should not deter any one from using them and should bring the method into general use. There are some facings in which the pins are so close together that it is impossible to use two nuts. In such a case one only is used and in place of the second nut the non-fusible pin is used alone while soldering the case. The use of the cement behind the facings is valuable not only as a sort of cushion, but it also closes up the joint between the backing and facing. In conclusion let me say, that though the technique of this method is very fine it is anything but difficult. In my own practice I use it altogether and save time and worry thereby. It is not an experiment but a method well tried and which has not yet been found wanting. Perhaps I should have stated before that in case of fracture the method of repair is obvious. It is only necessary to tap the broken ends of the pins on facing side of backing and the nut attachments will drop out. You then secure a new facing, grind to position, tap the pins and attach with two new nuts.

SUGGGESTIONS ON TAGGART INLAYS.

BY L. E. CUSTER, A. M., D. D. S., DAYTON, OHIO.

With the cast fililng there is no longer any excuse for poor proximal contact. When the filling has been cast the point of contact can be readily seen. I have been fusing on at this point a little 22-k gold, about the size of a pinhead. This when finished rounds out into a small convex surface what would otherwise be a flat surface. It is also a little harder than the pure gold and thereby insures a longer life without faceting.

Sometimes in trying in the filling a frail margin is broken off. If the filling is of pure gold this can be easily managed. Heat the filling red hot. This makes it cohesive. Dry out the cavity and place the filling in position. Lay a small piece of annealed platinum and gold foil against the enamel and a little ways on the gold filling. This will cohere to the filling and it can then be easily formed to the broken enamel margin, just as one would adapt a matrix for an inlay. Remove the filling and the platinum foil intact and flow the matrix thus formed full of 22-k gold.

It is well to dress the filling as nearly as possible to the proper marginal edge before setting. If there is any over-lapping, and especially if thick it cannot be so easily burnished into contact with the enamel. I find that by dressing down to a flush surface, always dressing toward the margin that when set a rotary burnisher will easily spin the gold into an actual contact with the enamel before the cement has set.

Sometimes a filling may not be sharply cast at the margins. If it is a crown cavity, the filling may be set and while still dry an old carborundum wheel well filled with gold if revolved towards the margin will push the gold ahead of it and the faulty margin will thus be carried against the enamel wall.

HAND TOOLS.*

BY GARRETT NEWKIRK, M. D., PASADENA, CAL.

Some one has said that the most destinctive definition that could be made of the term "man" would be: "The animal who uses tools." It seems to be the striking fact that of all the race he is the only one to employ an instrument or device of any sort to supplement the work of his own physical members. It has been stated, and denied, that certain monkeys in a wild state have been known to use sticks for knocking nuts or fruit from trees. The statement is of very doubtful authenticity. I remember that as a boy I used to see the chimpanzee and ourang outang represented in pictures carrying a club, evidently to be used as a weapon, but so far as I am aware no one ever saw the like except with the eye of his imagination.

The elephant possesses wonderful intelligence and capacity for being trained. He can be taught to carry timbers and pile the same in order; but I am sure no one has ever got him to go beyond the use of his own tusks and trunk, and make use of a lever or handspike in moving those same timbers. The use of an intermediary substance between his own body and the object to be moved, seems to be quite beyond the comprehension of any animal other than man.

My son has a beautiful collie dog, very intelligent and teachable. She is an expert ball player, that is, she can catch the ball, either before it strikes the ground or on "first bounce." But I doubt if she could with any amount of training learn to throw the ball once with any definite aim or purpose.

We have all known intelligent horses, some who could open a gate to let themselves out, or untie a knot in a rope to get themselves loose; but no one, I think, ever knew a horse to close a gate with the purpose of shutting out another horse or to use a rope for the purpose of dragging something toward him. Let us suppose that hay were placed within reach of the most intelligent horse, with the one condition that he should pull on a rake handle with his teeth (as he could easily do with human intelligence). How certainly would he starve to death if this were his only way of getting food.

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*Sent to the Winnipeg Dental Club and read before that body January 14, 1908.

One might almost suspect certain birds of using tools, so ingenious are they in the construction of their nests. A familiar friend of mine, the hooded oriole, builds its nest beneath the broad leaf of the California fan palm, so artfully concealed by color and location that it is rarely seen by the passer by. The nest is pendulous but not deep, and is sewed fast to the leaf at four points, leaving just room for the bird to enter. The thread used consists of the long fibers taken from the fringe of the palm that hang down like ravelings. This thread is passed back and forth through the leaf and down to the corner of the nest till it is securely held in place. Both birds have been seen working together in this process, one below, the other above the leaf, passing the thread back and forth. All this, of course, represents closely the use of a needle and thread. The needle, however, is the bird's beak, part of his own anatomy. With all his art of sewing it is not likely any one could make the hooded oriole appreciate the value of a needle other than that provided for him by nature. Nor would he be convinced of the superiority of linen thread over palm ravelings.

As to tools and mechanics, primitive man seems to have started out on the animal plane, with less of ingenuity perhaps than birds have acquired; for it is said that he lived in caves and hollow trees long before he thought of building a hut for himself out of materials he could gather with his hands,—and he had no tools.

You are all familiar with the story of his progress—the age of stone implements, followed by those of copper and brass and iron. From the days of Tubal-Cain, "the forger of every cutting instrument of brass or iron," as we are told in the book of Genesis, to those of Watt and Fulton, Edison and Marconi, seems a far cry in the process of mechanical evolution. And through the intervening ages the comparative civilization of any people could have been measured by their knowledge and use of tools.

THE TWO GREAT CLASSES.

Tools may be considered in two grand divisions, hand and machine. As we all know, the former had long precedence of the latter. We may say truthfully, I think, that every machine tool known is but a modification of some form of hand tool that has been in use through centuries of time. The machine is for the purpose of multiplying motion, power and production. It also insures in certain cases greater precision and accuracy. A pile driver is only a hammer.

A piston rod is only an arm and hand turning a crank just as the arm and hand of a man turns a grindstone. The millions of spindles daily weaving cloth in England and America had their counterparts in the days of Job when he said, "My days are swifter than the weaver's shuttle."

And we may note that while the machine tool is performing so much of the world's work it has not in any department altogether superseded the hand tool, which still holds its honored place with at least a few.

The machine tool represents the idea of the inventor. Except as its work may be varied in certain instances under a guiding hand, the machine tool eliminates the workman in his individuality. It nearly takes thought out of work, and with it as a rule all the charm of variation.

We have thousands of factories turning out machine tool furniture, not a single piece of which will compare in beauty or durability with the best hand tool work that has come down to us from decades and centuries past. And the arts and crafts are still with us, gaining new life and force. The users of hand tools are more respected today, and are doing better work, both in woods and metals, than they were forty years ago.

Within the century past the world seems to have been in danger of losing its finer senses amid the ever increasing roar of machinery. But we have become accustomed to it, and are taking a little time to think, and we are coming to realize that an age of mechanism can never shut out the development and beauty that had its slow evolution through the preceding ages. We go in ever increasing numbers and with new enthusiasm to view the marvelous decorations and adornments of the older world, wrought out by patient hands.

We think of the ancient guild and the master-craftsman who toiled for some high honor from his youth. Passing through a long apprenticeship he reached that degree of excellence where he was judged worthy of competition. Then whether the work should be of metal or wood or stone, he must make an original design. He must use material of crude form. He must himself forge and fashion every tool with which to do the work. Under these conditions, without the least advice or assistance, he must with infinite pains work out his design and at last submit to the judges his "master piece." It stood for years of time and toil, his very life and soul—himself.

THE GENIUS AND THE STONE.

"Ugly and useless there it lay,
Till Michel Angelo passed that way."

FORMS OF HAND TOOLS.

The majority of hand tools are based on the knife—the instrument with a cutting edge. Burs—once used by hand alone, now with the engine hand piece—consist of a series of blades, straight or semicircular. All excavators are but knives in variety of size and form The chisel is a blade beveled as a rule on one side only. The "cold" chisel is more properly a wedge-blade. What we call "scalers" are but forms of the chisel or knife-blade "excavator." The probe is an instrument for feeling, to explore. Broaches of all sorts are forms of the probe.

What we call "engine" instruments are to a considerable degree hand tools after all. They do not work without variation like the machine that cuts a watch wheel, but depend for their usefulness on immediate and variable guidance. The "machine" bur must be guided exactly as the hand bur. It is only power and velocity that the machine supplies. Hand pressure and guidance are the necessary adjuncts in every operation, whether with drills, cutting or finishing burs, stones, polishing wheels, or what not.

PRINCIPLES AS TO FORM.

According to the measure of force employed, the most effective instrument is the simplest in form, that is, straight. The working point being in line with the handle, no power is lost. There is no opposing leverage. In the evolution of certain common tools you may observe, if you will, that this principle has been recognized in the production of the best. Note, for example, the relation of the

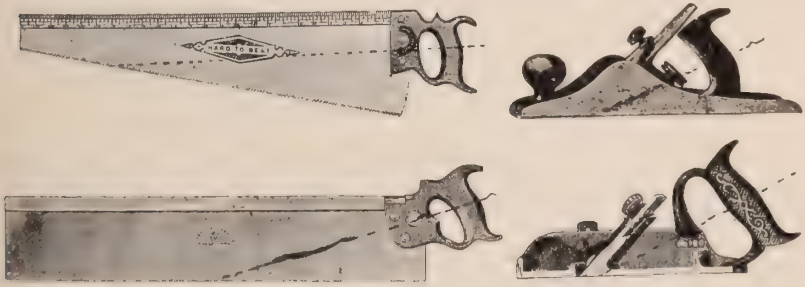

Fig. 1.
The dotted lines show the direction of force.

handle to the blade in a good hand saw. The handle is not set at right angles with the blade, but with the top forward, so that the line of force sets directly toward the center of the cutting edge.

Even with the double-handed "cross-cut" saw there is the same adaptation of direction and force. There is a like relation in the plane. At first glance one might think the circular saw a complete exception. Please observe, however, that even here the saw must work in a perfectly true straight line at exact right angles with a true straight shaft.

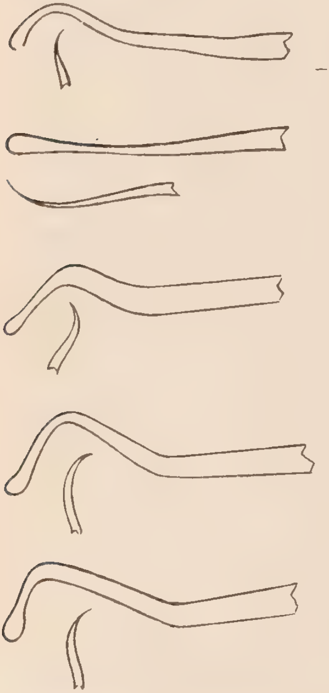

Fig. 2.

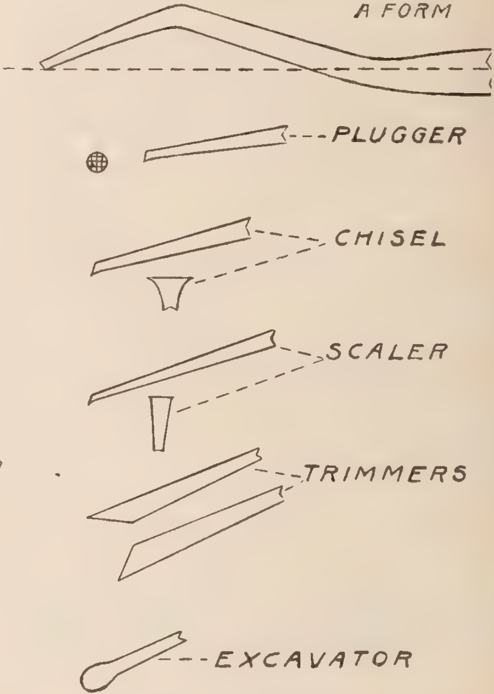

Fig. 4.

Fig. 2.—Very thin bladed excavator, less than half the thickness of the ordinary spoon.

Fig. 4.—A form and applications of the form.

Now with the dental hand instrument it is not possible, of course, to do everything with those of straight pattern. There must be in the working end of the tool a considerable variety of curves for accommodation. They must be made so that the point or blade will reach and touch accurately places utterly inaccessible to the straight form.

But right here comes in this important proposition, and one of the most practical that was ever thought out: *No matter what the curves of accommodation may be in the shank, it is nearly always possible to have the point or blade on a line very closely with that of the handle.* The most popular instruments on the market are those which, consciously or unconsciously on the part of their designers, embody this principle. Take for example the Darby-Perry so-called "spoon" excavators. The important feature of one of those instruments is not the "spoon," but the double curve by which the point of resistance, the blade, is kept in line with the main shank and handle.

Looked at closely it will be observed that there are really two double curves, one for general accommodation, another for making the tool a "right" or "left." This double application of the idea, it is very necessary to remember if one is to attempt the forming of instruments for his own use. Not only is this principle correct mechanically as embodying the conservation of force along with delicacy and effectiveness, but the forms evolved appeal immediately to the artistic sense. They conform to "the line of ease and grace" drawn by Hogarth, the great painter, nearly two centuries ago.

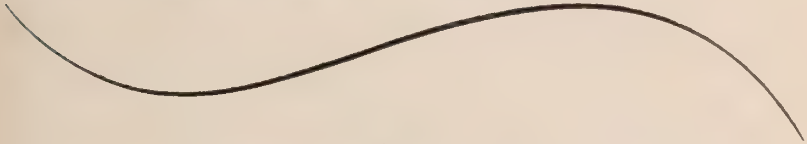

Fig. 3.

Hogarth's "Line of Ease and Grace."

This line is applicable to a variety of dental tools, the curves of which may be considerable or but slight; and the same curves are applicable to various classes of instruments—chisels, scalers and pluggers.

In place of the curve, however, there is an advantage often in using straight lines, but carrying out the same principle of having the point in line with the shank. By making the blade thin and fine with a stiff unyielding neck, the tool will possess a positiveness of action not obtainable with the usual curve. This applies particularly to a form of scaler with a long reach for removing deposits from the lingual surfaces of the roots of lower incisors. Fig. 4.

Such an instrument must be practically without spring, just as a perfect straight one would be made for similar use.

THE SOLID VS. "CONE-SOCKET."

With the exception of those that have been turned to the limit and left till they were rusted in, and could not be removed, the cone-socket instrument has never been as satisfactory in my hands as the one-piece tool. It seems to me not ideal to have a break in the continuity of metal between the hand and the instrument point. There is a positiveness in atomic union that can not be produced in two pieces mechanically connected, and if one acquires the skill and the habit of making a majority of his every-day working points there is no saving in or occasion for the purchase of cone-socket instruments, and this brings me to a question I wish to consider briefly.

THE MAKING OF CERTAIN HAND TOOLS BY THE DENTIST HIMSELF.

It is the opinion of the writer that no course in dental mechanics should be thought complete or possible that does not include practical instruction in tempering of steel, and the shaping of common dental tools.

I think that no one should be given a dental diploma who has not been so instructed, and who has not demonstrated his ability to do such work. It is not difficult to give or to receive such teaching. To any one mechanically inclined (and no other is fit to be a dentist) the work once begun and carried forward becomes extremely fascinating. The dentist who has never fashioned a tool for his own use, one that represents his own thought and personality, has missed one of the joys that ought to be his.

The advantages of instrument making in one's own office may be briefly enumerated as follows: First, one acquires a degree of manual skill in the doing of the work. He is certain also to make a closer study of instrument forms than he otherwise would. His inventive genius is stimulated to the production of new forms. Second, the ability to make and temper a new point is exceedingly convenient when it happens that one of common use gets broken and may not be easily replaced. This will occur in the practice of any man who is not within a few blocks of a dental supply house; and the question of economy involved is well worth considering, especially with the young man who has plenty of time for laboratory work and the cultivation of any new art that will add to his resources and skill. The ability to make a valuable tool out of "any old thing" with a handle and a sufficient neck of good steel, makes the operator wonderfully independent as to those of ordinary, every-day use.

The man who is utterly dependent on the supply houses for the simplest tools is at a serious disadvantage. If he should happen to fracture an instrument on which he has learned to depend, the chances are that he may have to make an unsatisfactory substitution, and wait possibly for some time to secure what he needs. He may not secure it at all and gets in the way of doing without it, to the detriment of his work. Some young men start out with a fairly good outfit, break one tool after another until, if search were made, hardly a first-class instrument, chisel, scaler or excavator, could be found in the office.

Third, in no other way than by making instrument points for his own use will the operator be able fully to express his own individuality. It seems to me that the ideals of a dentist ought to be equal at least to those of the ancient craftsman, who as a final test was required to forge the tools with which he made his masterpiece.

It goes without saying that I would not expect the dentist to dispense with the use of instruments he can buy, many of which are of exquisite forms, the result of much study and great skill on the part of their makers. But I would have everyone able for himself to imitate these forms, to make, if need be, new forms to meet special emergencies.

TEMPERING.

Many are deterred from the making of new tools by a "bugaboo" —the imaginary difficulty of giving a right temper to the point or blade. It is necessary to remember only two or three principles and make their application with ordinary skill that may be acquired with a little patience and practice.

First, the temper—hardness—of a point is given to it by sudden chilling, which causes a contraction and closer relation of the molecules of steel. Having heated the point to a bright red, it must be transfered to the chilling medium *instantly*, not allowed to half cool or quarter cool while being transferred. What the chilling medium consists of matters little—the essential thing is temperature. I incline to the belief that for ordinary use there is nothing better than water, but the water must be cold, anywhere from the temperature of common well water, fresh drawn, to that of ice water.

The heating of all points of ordinary size should be done over a gas or alcohol flame—not with a blowpipe. The heating is done more slowly, carefully, accurately. One hand holds the instrument to be tempered, the other a small cup containing the chilling medium, with its lip close up to the edge of the flame, so that at the proper moment the point can be dropped with the quickest movement possible; so quickly that the intermediate air has practically no effect. The test of the cutting edge after it has been sharpened on an Arkansas stone is that it will cut bone, i.e., the handle of a tooth brush for example, or even untempered steel without being perceptibly dulled.

Instead of the common little "dinkey" stones supplied to dentists by the dealers, one should get from some hardware dealer an "Arkansas" as least six inches long so he will have room for a respectable sweeping movement of the blade thereon. Once tried such a stone will be deemed indispensable ever after.

In instruments of slender form it is necessary, of course, to draw the temper from the neck or shank to prevent breakage. The *high* temper is necessary only for a very short distance from and inclusive of the edge. This is preserved by insertion of the piece to and a little beyond the line in a bit of moist pine wood. Then the neck is heated just enough to produce a spring temper and immersed again in cold water. It is not as important, however, that the transit should be quickly made as in the first tempering. What is wanted, of course, is a shank that will neither bend or break with ordinary use, in other words, have a spring temper.

There are some instruments wherein a spring temper is desired throughout, as for example, thin blades somewhat after the pattern of the old "Howe" scalers. This may be obtained in part by persistent hammering. We may put the finishing touch on such instruments oftentimes by what I have termed the "air-chill"—i.e., after heating the blade to a dull red it is thrown swiftly into the air.

A FEW SUGGESTIONS.

A nearly smooth finish should be made of the instrument before the final tempering. Sometimes the shaping of points can be done best with corundum (or carborundum) stones run by the engine. In the finish of certain instruments like the "pull" cut scaler, it may be of advantage to temper the head first, and shape the blade later, with disks and wheels.

It is better to use small pliers, both round nose and flat, for much of the shaping of tool shanks, these being held over the flame meantime.

Gauge the flame according to the work you are doing and degree of heat necessary. It is quite possible to injure steel and destroy fine points by using too high a flame.

In heating for the final temper it is often best not to heat the point first. Let the flame strike the shank first, then carry the red gradually to the point. Avoid burning—overheating of the cutting edge.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held February 18, 1908, with the President, Dr. F. E. Roach, in the chair.

Dr. I. N. Broomell, Dean of the Dental Department of the Medico-Chirurgical College of Philadelphia, read a paper (by invitation), entitled, "What Do We Know Regarding the Blood Supply to Teeth, With Special Reference to the Genesis of the Subject?"

DISCUSSION.

Dr. Fred B. Noyes:

I feel that I ought to apologize to you and to the essayist for the opening of this discussion, as I did not receive the paper until last night, and have not had time to study it carefully since, and I was not even able to pick out a few miscroscopic slides which I thought would be of interest in connection with the beautiful dissections we have seen. The pictures and paper were both very interesting to me, for they made very much more clear some of the ideas on this subject that I have acquired from microscopic study, rather than from a study of dissected specimens.

In reading the paper I was inclined to feel, at first, as if it was a little bit hard on the diagrams, in that the diagrams might be taken as not representing all that the maker of them had in mind. It is certainly absurd to think, for a minute, that a tooth is supplied with one arterial branch from the maxillary artery to each root of that tooth; that it comes up like a hose pipe which supplies water. Any one, who has done any microscopic work on the peridental membrane, knows that that is an absolutely erroneous conception. But I believe that a great many dentists, who have studied the subject entirely from textbooks, have that distinct idea. I have thought so for a good while, especially from things that have been said about the subject in connection with the treatment of pyorrhea, for instance. I have always wanted to squirm when men advocated the removal of pulps in cases of pyorrhea because the blood supply of the pulp robbed the peridental membrane of sufficient blood supply. Anybody who has studied microscopic sections of the peridental membrane would not have that idea, because he would see too many blood vessels going into the peridental membrane from the bone all the way around the alveolar wall, for the small number of the blood vessels given off from the peridental membrane to the pulp to seriously interfere with the blood supply of the peridental membrane. While I believe the removal of the pulp in cases of pyorrhea is a good thing in certain cases, it is not good for the reason I have mentioned.

The paper is certainly an extremely valuable one, in that it shows us the difference in the blood supply to the teeth in the two periods, that is, the period when it is in the crypt, and the period when it is a functional tooth. I don't believe that has been nearly sufficiently emphasized. I have said, for instance, a number of times to classes, that as a tooth lies in its crypt in the bone it is practically unattached to the crypt, and the Doctor has brought that point out clearly in his paper; that is, the tooth lies in the crypt in the bone; the bone is supplied with its blood supply; the follicle is supplied with its blood supply, but the follicle is not fastened to the wall of the crypt. I have emphasized that to my classes in connection with the relation of the bicuspids to the temporary molars, and have brought out the fact that we have a loss of bicuspids in the extraction of the temporary molars, and that, if you will trace it back, when patients come to you with a missing bicuspid, you will find that the bicuspid was lifted out of its crypt along with a temporary molar that was extracted. It comes out with the molar because it is not fastened to its crypt wall, and these dissections show that freeness from the crypt wall. If it were fastened to the crypt wall, it should receive its blood supply from the crypt wall, but not being fastened to the crypt wall, it must receive its blood supply from the follicle wall as shown in the dissections. The fact is established by the essayist that we have a marked change in the vascular supply between the embryonal and the adult condition. I believe the essayist will find, as he continues this subject, which is not complete as he says, that when the follicle wall is transformed into the peridental membrane—in other words—when the roof of the crypt has been removed and the tooth comes through the gum and the follicle fibres are converted into peridental membrane fibres and are attached on one side to the cementum and on the other side to the bone, there is an entire reconstruction of the vascular supply to that tissue. The supply to the follicle wall is from above. The supply to the peridental membrane is brought in through the cancellous bone and it is supplied through the whole side of the alveolar process as well as to the apical space.

In the study of sections, particularly in connection with the development of the root and the transformation of the dental papilla in the tooth pulp, which is a gradual process, I have always felt that the condition was described something like this, and it was brought out very well by the essayist. As the essayist has said, the blood supply comes in through the follicle wall. If you notice, that follicle wall springs, in the first instance, from the base of the dental papilla and surrounds the entire tooth germ. The blood vessels come in through the follicle wall. You need to get that idea clearly in your mind in order to get at what I want to bring out. The enamel organ grows down from the epithelium. It is at first a spherical sac. Then it is converted into a double layer cap and it covers the cone-shaped papilla of the connective tissue. There is at first no follicle wall, but you have an epithelial double layer cap resting on the cone-shaped mass of connective tissue. From the base of that cone of connective tissue, the fibres begin to appear and grow upwards and surround the dental papilla and epithelial cap, and they are attached to the embryonal tissue of the papilla at the base. The blood supply comes in through the fibres which form the beginning of the follicle wall at the base of the papilla, and these vessels come into the dental pulp all around the circumference of it at its base. As the tooth germ goes on developing, we have an increase in the size of the dental papilla, and it does not simply lift the tooth crown upwards, but it pushes the base of the papilla downward. The resistance above the tooth crown is greater than the resistance of the cancellous bone below the papilla, and consequently the lower part of the papilla is pushed downward through the cancellous bone, and the little papilla, which is short at first, becomes longer and longer, until it reaches the full length of the tooth. As the root is formed the vessels come into it from the base of the lengthening follicle wall, coming around the end of the dentine that has already been formed. As that goes on more and more of the blood vessels are cut off, until finally, when the root has reached its full length, we have only a few blood vessels coming around the end of the root into the pulp. I have seen sections that show vessels in that manner coming in from both sides, leaving double foramina, with vessels coming in and out of both, and even in the adult you may find more than one artery entering the side of the root in the region of the apex. While the arterial supply is chiefly in the region of the apex, it is not confined to the apex. I believe we have found as many as five or six small arteries entering in that region.

The relation that was shown between the distribution of the papilla from the follicle wall is exceedingly interesting and very important. When the follicle wall is lost, there is a change in the tissue, the cementum attaching the tissues to the root and osteoblasts building them into the cancellous bone, forming the wall of the alveolus and the establishment of a connection between the blood vessels of the cancellous bone which are derived indirectly from the inferior dental artery, not directly by a single shoot, but indirectly through interbranching vessels, and the condition is changed entirely from the condition which exists in the early period.

The author referred to blood pressure in connection with the eruption of the teeth. That has been a subject I have spent a great deal of time in thinking about. The idea represented by Constant is so absolutely crude, as to be almost ridiculous, but that blood pressure has something to do with the force which causes the eruption of the teeth, I think anyone who has studied the subject, thought about it, or made dissections, either microscopic or macroscopic, will agree. But the question of blood pressure is by no means the only thing involved. We have the question of the force which is exerted by the multiplication of cells. The force which is exerted by the increase in the amount of the fluid present in these cells must be related to the blood pressure.

There is the relation of the osmotic pressure. The tension of the semi-fluid contents of these cells and of the surrounding intracellular fluids and the relationship of the pressure of the fluids of the blood to the fluids of the intracellular spaces, as well as the relation of these fluids to the fluids within the cell wall itself and all of these must be related to or connected with blood pressure. But it is not explainable on the theory of blood pressure alone. It is a more complicated problem than a simple matter of tension upon the blood vessel walls. There is more in it than that, and one will not get a clear idea of it until he takes into consideration other factors besides blood pressure.

The slides were delightful to see to anyone who has done any slidemaking or any dissection work. It is a pleasure to me to have seen such beautiful dissections and excellent photographs and slides. I am glad to have had the opportunity to read and hear the paper and to have seen these excellent slides.

DR. C. E. JONES:

I was delighted to hear this splendid paper. At the time the chairman of the program committee asked me to discuss this paper, he said that he had provided for expert testimony, and that he desired me to speak from the viewpoint of the practicing dentist.

There are many interesting things in this paper because it is an innovation, and coming from so eminent an authority as Dr. Broomell, it places the subject before us in such a way that we cannot refute what he has said, and, of course, we have been unable to parallel his work, and, therefore, we cannot altogether confirm it.

I can readily understand why Dr. Broomell is called upon to investigate the blood supply of the tooth follicle at this time. I remember reading, some years ago, in his textbook, about slides showing where the dental follicle was lifted out of the immature jaw and while it did not appeal to me at the time, I have since wondered how the follicle received its blood supply. I am not surprised that the Doctor has been working on this particular line, wondering and marveling at the channels through which the blood supply reaches the follicle of the developing tooth.

I wish to apologize to the essayist and to the members present for attempting to discuss this paper. The paper offers very little opportunity for discussion. The Doctor has placed some apparently irrefutable facts before us, and I feel that I can do nothing more than compliment him upon his most excellent work, and tell him that I have appreciated hearing the paper very much.

DR. RUDOLPH BECK:

I find it difficult to discuss a paper of this nature for the simple reason that the vital part of it deals with a new method. I ask you, gentlemen, is it not refreshing to hear every now and then of some member of our profession striking out into a new path, in order to discover some new method or to overthrow some old doctrine that has withstood the test of time? Recently one of our members and fellow practitioners in Chicago (I refer to Dr. Taggart), has practically overthrown or revolutionized our ideas with regard to prosthetic dentistry by his discovery. Here come a gentleman from the far East who overthrows the teachings of our textbooks which have been accepted up to date.

I do not think that we are yet prepared to put our stamp of approval on all that he has said, although after having heard what Dr. Noyes has said one would be inclined to. We must admit that there is much merit in this new presentation. I would urge those gentlemen who are interested in the teaching of histology and in this department of dental study to carry on some independent investigations and either confirm or disprove the assertions of Dr. Broomell.

Dr. Otto Holinger:

I take my cue from the other gentlemen who have discussed the paper, and although I cannot speak in any way of the direct blood supply to the dental follicle, and as these investigations are not complete, perhaps I may add a hint or two for future investigations. What Dr. Broomell says with reference to the method of supplying blood to the follicle has been aptly shown in the embryological formations and investigations of every organ of the body. Take, for instance, the fetus itself in the beginning. The fetus is formed and is nourished by the placenta and umbilical artery and vein. New organs, such as the bladder, for instance, are formed first by substitute. The first substitute taking the place of the bladder is the urachus. In the development of the brain, various substitutes are used.

In the further investigation of this subject, the cause of these things will be found to be simple when we get down to scientific facts, although the subject may appear complicated to many of us. When we think of blood pressure, it must be remembered that wherever there is blood pressure within the body, there is more or less atrophy, and when a too violent increase in blood pressure takes place, we have necrosis or gangrene. By looking at the follicle first as a human fetus. and then following out the other organs and comparing it with the development of other organs of the body, which have been so thoroughly investigated by German, French and Austrian scientists, we will gradually come to the explanation of the phenomena he finds in regard to the dental follicle.

Dr. Edmund Noyes:

I have scarcely sufficient excuse for referring to some dissections that Dr.. J. J. R. Patrick once brought to the meeting of the Illinois State Dental Society. It must have been twenty years ago. I remember very well that he called attention particularly to the fact that these developing teeth were not attached to the crypts in which they were growing, just as Dr. Broomell has called our attention to it tonight, and my recollection is that he suggested at the time that the blood supply could not possibly be derived from one or two principal branches, as the diagrammatic representations in the textbook lead students who never look at the tissues themselves to infer, and he called attention to the fact that there is such a thing as "conventional anatomy."

It is very interesting, and it seems to me, a very useful service, to correct the popular and wide-spread impressions derived from diagrammatic textbooks and crude illustrations which may represent the idea in the mind of the man who made them, or which he may have used simply as a rough explanation, how some of these things are done.

Dr. Broomell (closing the discussion):

My primary thought in the preparation of this paper was to correct what seems to have been an erroneous idea regarding the blood supply of the teeth. My thoughts have been seconded by no less an authority than Professor Noyes, and it has been stated here that Professor Noyes is the only authority you have in Chicago on this subject. Can we not in some way make medical men believe that we are sometimes correct? Why should we let our textbooks go out year after year with these same old diagrams and dental books as well, my own included, showing this incorrect idea of the distribution of blood to the roots of teeth?

In the school with which I am now connected, we have a very large medical department and every man in that department has a large head when they compare themselves with the dental department. We are simply dentists and they are elevated men. They laugh at this idea which I have advanced. I do not ask you to say that I am right, but if I can have your support sufficiently to give me encouragement that I am right, I will go home happy.

Dr. Noyes made some reference to the eruption of the teeth and the force which governs this. I stated in my paper that I thought the blood pressure had something to do with this. I have always taught that in this, as in most other instances, function governs organization. It is the purpose of the teeth to reach the surface so that they can perform their functions, just as we have other organs in the body passing from one place to another during development, so we have this normal, physiological developmental action in the teeth taking place. They find their way to the surface because their functions cannot be carried on until they reach that point.

Some reference was made to the fact that the paper might have some practical application. You will pardon me if I add some strength to this idea. I believe it has a practical application to orthodontia. Last fall I had the pleasure of presenting a portion of the paper to the American Society of Orthodontists in Detroit. I did so because I thought it had a practical bearing on the subjects which are discussed by them. The question is frequently asked by orthodontists and by dentists in general, if the movement of the teeth in their follicular life, one way or the other, is detrimental to or interferes with growth, because the blood supply may be cut off. If the idea as presented is recognized, it will not interfere materially with the life of the tooth, no matter what pressure may be used in orthodontia.

The second speaker (Dr. Jones), seems to take some exception to the fact that the essayist did not deal with the genesis of the subject, but I think I protected myself sufficiently when I made the statement that the subject was not taken up from the microscopic standpoint. Therefore, it could hardly be from the beginning, or actual genesis, for it would then have to be microscopic.

I am a little bit surprised that Professor Noyes agrees with what I said, because I have never, to my knowledge, heard him make the statement before that he thought such conditions were present. If he has made these statements and they are in print, then I will acknowledge I am behind him.

If Dr. Patrick made the statement which Dr. Noyes has attributed to him, then the seed sown by him has not borne fruit as we have been going on in the same old way ever since.

Just before taking my place to close the discussion, I was asked a question regarding the "new" vessel which was shown in the last illustration. I would like to ask Dr. Noyes if he has any idea as to what that vessel is.

DR. NOYES:

It is new to me, Doctor.

DR. BROOMELL:

I call it a "new" vessel because it is new to me. The question asked, was "What is the relationship of this new vessel to the surface?" I will say that while the illustration did not show clearly, it was not only subepithelium, but also beneath the connective tissue, deeply implanted in the substance of the bone. I lifted off three-eighths of an inch of the bone and the alveolus above it, so that it passed directly through the substance of the bone.

DR. NOYES:

Did you find any special relation of that to the periosteum?

DR. BROOMELL:

It was way beneath the periosteum. There was no connection whatever, excepting to the main follicle wall.

I am very much obliged to you for your kind attention and for this interesting discussion.

DR. EDMUND NOYES:

In my previous remarks I did not mean to imply that twenty years ago Dr. Patrick presented the substance of what we have heard this evening. My recollection of what Dr. Patrick said at that time is too uncertain for me to assert that at all, for I have not re-read his paper in fifteen or twenty years, and it is only a vague recollection in my mind of seeing those dissections which showed the sac of the developing tooth in its bony crypt with little, if any, apparant attachment.

A regular meeting was held March 17, 1908, with the President, Dr. F. E. Roach, in the chair.

Dr. W. H. G. Logan read a paper entitled, "Diagnosis and Treatment of Certain Acute Destructive Diseases of the Dental Pulp."

DISCUSSION.

DR. C. N. JOHNSON:

The paper we have just listened to is exceedingly well timed and important. An organ with whose pathological conditions we are so frequently called upon to deal should have received more consideration from the profession than it has, and it is gratifying to have presented to us at this time so comprehensive and detailed a statement of the various abnormal conditions following caries of the teeth to which the pulp may be subjected. I will not attempt a discussion of the pure pathology involved in the subject, but will merely touch here and there on some of the practical features of the question which we encounter every day in our work.

As the essayist has said, in diagnosing pulp trouble, we cannot avail ourselves of the benefit of microscopical study in each case as can be done with many affections of the human system, so our chief reliance must be upon the symptoms present. A close study of the symptoms of various pulp affections is therefore a very important part of the practitioner's equipment to meet and intelligently treat these cases, and be it said in this connection, that it takes years of careful observation to enable a man to judge accurately as to what should be done in each case.

It has seemed to me that the tendency in recent times is to hold the pulp in too light a regard and to destroy pulps which could be saved. I am in full accord with the essayist when he intimates that an infected pulp should be taken out rather than that it should be allowed to remain with the almost certain result of ultimate death and pericemental involvement, but I am not in sympathy with a common tendency in the profession which seems to follow the Irishman's suggestion, "Whiniver you see a head, hit it."

There is another saying which I have seen quoted some place to the effect that "dead pulps tell no tales." This is not only cowardly, but misleading, as many a tortuous canal has frequently demonstrated. I was pleased to note that the essayist called attention to the necessity for saving alive, if possible, all pulps in teeth, the roots of which had not been completely formed. To lose a pulp in such a tooth is to place the future of the tooth in jeopardy.

Another consideration in this connection is worthy of more attention than it receives. While a tooth after losing its pulp may be made, by proper treatment and filling, a useful organ for an indefinite period, yet the loss of the pulp seems to impair, in a certain sense, the integrity of the pericemental membrane. Dr. Black has conclusively shown that teeth with living pulps will sustain a much greater stress on closure of the jaws than will pulpless teeth, and while this does not seem to affect materially the process of mastication, yet it is a fact which should not be ignored in the management of these cases.

Pulps will frequently recover even after severe irritation, provided the constitutional conditions are favorable and the proper treatment is instituted, and I would rather have in my own mouth a tooth with a living normal pulp than to have a pulpless tooth, no matter how skillfully the canals are filled.

It is often a nice point to decide between an attempt to save the pulp or to destroy it, but if the dentist will follow the teachings of the paper just read, he will not go far astray. One of the indications to be observed relates to the color of the blood which issues from an exposed pulp. If the blood is dark in color, showing congestion, it is an unfavorable indication, but if it is bright red or arterial in character, the chances are in favor of saving the pulp. Another symptom to note carefully is the response to treatment when pain is present. If the pain subsides immediately and the tooth remains perfectly comfortable after treatment, the indications are favorable, but if there is a tendency for the pain to recur at intervals, it is a doubtful case.

I would not countenance the practice once in vogue of attempting to save all pulps by capping, but I do feel that in recent years there is a tendency to destroy more pulps than is necessary.

Dr. F. W. Gethro:

I agree with the essayist in the main in what he has said. Before discussing some of the points that have been brought out, I desire to express my thanks to him for his excellent paper and for bringing before us a subject that is of such vast importance to all. I agree with the author when he says that pulps should be removed if, from our best deductions, it is evident that sooner or later those pulps are going to be lost. I believe it is unquestionably good practice to remove them. He has dealt with this subject from a clinical standpoint, and I will not deal with it from any other viewpoint. I agree with him, too, when he says that, when there is a thin wall of normal dentine covering the pulp, it presents a very good opportunity for recovery to normal conditions. There is no question about that.

There are a few points I would like to bring out, and one is the treatment of acute active hyperemia. Dr. Logan says that "after partially preparing the cavity by any plan that results in the removal of the greater portion, if not all, of the carious dentine, wash out this cavity with warm, mild antiseptic solution, then put the rubber dam in position and place a pellet of cotton moistened with 95 per cent phenol into the dried cavity, leaving it for a brief period; then remove the phenol and desiccate the dentine with absolute alcohol and warm air, after which place oil of cloves on cotton in the cavity and retain this remedy with cement if our cavity is one that is subject to occlusal stress." I would say, it would be better to make some reference to the way in which this carious dentine should be removed. I do not believe that "any plan" is a good plan. I would unqualifiedly condemn the dental engine at this point. It seems to me, that in removing caries from a tooth, the pulp is likely to be exposed, and I think it is a dangerous thing to use the engine at this time. I am inclined to believe that when a pulp is exposed by a bur, it will not recover its normal condition. I differ with Dr. Logan on that point. I am assuming now that we have normal conditions to deal with. Of course, if we are dealing with carious dentine, we all agree that when a pulp is exposed or decay has reached it, there is very little or no chance for recovery. I believe the bur carries with it chips, etc., of dentine, and from the laceration of the tissue I would not think the pulp would return to a normal condition. So on that ground, I would condemn the use of the dental engine. It would seem to me as if the best and practically the only instrument to use would be a large spoon excavator. This should be used in such a manner that it is impossible for it to slip by any accident into the pulp chamber. While I think that a pulp is not likely to return to a normal condition after it has been punctured by a bur, on the other hand if you simply cut the horn of the pulp or a part of the pulp with a large spoon, then your chances are good that that pulp will return to a normal condition under proper treatment.

I differ with Dr. Logan a little in regard to treatment. I am somewhat old-fashioned. I use the oil of cloves. I find it a most excellent remedy in dealing with these cases. My method of removing the decay and in trying to have the pulp return to a normal condition would be this: I would expect to prepare partially this cavity before placing the rubber dam. I should expect to break down the enamel and make the general form of the cavity. I would do that with sharp chisels, and with those instruments this can be done with very little pain to the patient. As soon as you are coming to a point where you are at all likely to involve the pulp, the rubber dam should be placed. Dr. Logan at this point uses phenol and later alcohol. It seems to me, as if the alcohol in its evaporation is likely to add to the hyperemia of the pulp and cause additional pain. I would only apply oil of cloves at this time to allay pain subsequent to the preparation of the cavity. I think alcohol can be used with much less pain when it is heated and then blown out.

Dr. Logan spoke of partially removing the decay. I would never go half way. If I am going to remove the decay with the hope of saving the pulp, I should certainly remove all of the decay regardless of conditions. I think that this is the best time to save the pulp, if it is possible to do so. Therefore, I would remove all of the decay, and I would expect to put in a filling at this time that is going to be permanent at its base. I mean by that a cement filling, and let it remain. I would not expect to make more than this one treatment in the saving of the pulp. But now and then, we are informed, by good authority, that cement is not to be relied on. We know that at present there is no cement on the market that is impervious to moisture and will not shrink; one thing or the other—it will either shrink or take up moisture. But cement can be placed over this pulp, and then later covered with a gutta percha filling. I would differ with Dr. Logan in that regard, as I think a gutta percha filling over a cement base gives us the best possible chance of saving this pulp.

In referring to another part of the paper, I want to quote Dr. Logan again. He says, "If upon the return of our patient, he reports no disturbance for the last two or three days, I would proceed to insert the permanent filling. If deep caries is present, a cavity lining should first be placed beneath the filling." He does not mean to convey the idea that he covers the carious material with cement, but I think his language can be so construed, and I think it will be so construed. The condition termed "non-septic pulpitis" is recognized as being beyond all return to a normal condition, and the only thing to do is to remove the pulp immediately.

There is one part of the paper which could be elaborated with great profit. We, as dentists, fail very many times to consider the value of the pulps of children's teeth. Dr. Johnson has referred to that. It is a very important consideration, and certainly many times means either retention or loss of teeth. For instance, we know that the first permanent molar sometimes does not complete its development, so far as root formation is concerned, until the child is twelve years of age. It is important to remember that. In cases of children, we may do some things and get better results than we can with adults For instance, we may have an exposed pulp in the case of a child from caries, and yet by properly capping that pulp and giving it proper treatment, it will return to a normal condition. This would not be true in most cases in adults. Possibly it is the extra amount of blood in the child's teeth at this time which accounts for the recovery or restoration.

So far as systemic diseases are concerned, I cannot say that I have ever known of a case in my practice of hyperemia or any condition of that sort that was due to systemic causes. At least, I have never been able to diagnose such a case; therefore, I cannot say anything about it.

I want to say a word or two with reference to the various nostrums that are sold by the dental depots for digesting pulps. I made an inquiry among the dental supply houses in reference to the various agents that are used to prevent abscesses and remedies that can be used so that we will not have to remove pulps. I found one place where they have four different remedies for those purposes, and I inquired as to the sale of them and was told that one of these agents sold like sugar in a grocery store. The dentist did not have to remove the pulp at all, but simply applied this remedy. Now, gentlemen, that sort of thing we want to combat among practitioners. Dentists are looking for the easy thing, and that is one of the things that is entirely wrong. It is unscientific.

I wish to thank the essayist for bringing this paper before the society. I believe it is one that will result in a great deal of benefit.

Dr. J. N. Crouse:

Since coming here, I have rather changed my line of thought from what I had intended to present to the society. I have in my possession four teeth with ossified pulps that were taken out of one mouth. These are interesting to look at and for me to give a little history of the case, but I shall not say very much about this form of trouble, because it may divert your attention from the paper of the evening, which has dealt with the saving of dental pulps. I want to pass these four teeth around so that you can all see them. They were removed about thirty years ago at intervals varying from three or four weeks to two or three months. Briefly, the history of this case was that there was no caries. There was not a symptom of pyorrhea. There was nothing to indicate that there was any disease except pain, and if any of you have ever made a diagnosis of ossified pulp, you know that it is not easy to find what tooth it is. It is a difficult condition to diagnose. I have seen several such cases in my practice, and some time in the future, if the society should see fit to invite me, I might read a little paper on this subject. I speak of this because it is the first time I have been invited to open a discussion on a paper. I have taken part in a lot of discussion without invitation. (Laughter.) But this is the first time I have been advertized to open a discussion.

I am very glad that the essayist has given us such an elaborate paper on so important a subject, because it has seemed to me that in the last twenty years the destruction of the pulps of teeth has been altogether too common. With the advent of bridge work, of cutting down teeth for abutments following the killing of pulps, and then some failures and severe criticisms, the capping of pulps and the saving of diseased pulps by capping have become dead issues, and the profession has fought shy of that treatment. For forty years I have capped pulps where I thought by so doing I could bring about a normal condition of those pulps. I have hundreds of them I have capped in the last forty years that are doing well.

I would differ from the essayist in regard to treatment. I seldom remove all of the decayed portion if I am likely to expose a pulp in so doing. I prefer to treat the tooth in a way to get rid of any ill effects rather than remove so much of the dentine which will expose or nearly expose the pulp. That has been my treatment. Many times I have left quite a quantity of the decayed portion because I would rather prolong the life of a pulp five years and then have it die than to remove it at once. I would, therefore, make a plea for the saving of pulps that are partially dead.

There is one symptom on which I rely as to whether a pulp is alive or dead, but it has not been mentioned this evening. If I can get healthy sensation when I am excavating the dentine, I place a good deal of reliance on it. If I do not get that, then I begin to get suspicious; I go further, but become more cautious. But if I get healthy sensation between the enamel and dentine, I have reason to believe that the pulp is healthy. If I do not get that sensation I will apply heat, and if I get an uncomfortable sensation from the heat I conclude there is gas there and it has expanded.

The diagnosis of these cases is important; but we cannot lay down any definite rule. I do not know of anything you can less accurately describe than a diseased pulp and to know when to cap it. I would cap them too often rather than destroy them too often, because patients may come back if the pulps give trouble. I would rather take chances of having three pulps alive and one die than to destroy two out of four, and destroy two that ought not to be destroyed.

I differ from most practitioners in the material I use for capping. I cap all pulps with oxychloride of zinc which will set hard.

If kept too long it deteriorates with age and you want to watch it. After it has been in the office for some little time you may find it necessary to use a new preparation. I have had a chemist prepare mine for me for years, and if I find it does not set well I take a fresh batch. After using phenol and oil of cloves, I fill pulp canals with oxchloride of zinc in preference to gutta percha or chlora percha, and my record is so satisfactory that I challenge anybody to produce more favorable results. I have but little trouble with teeth whose roots I fill. It is true, I have taken chances now and then, but if I were going over my practice again, starting afresh, I should differ very little in that line of treatment, and I would make the plea to cap more pulps, to take better care of them and do not destroy so many.

There are one or two things I want to speak of briefly that brought the treatment of pulps of teeth into some disrepute. You have heard of Dr. Allport He conceived the idea of exposing the pulp and taking out a flap and bringing the two flaps together and healing them up, and then filling the tooth. I don't really know whether he performed that operation or not, but he advocated it in papers and in society meetings. We had a red-hot time over this method of treatment, so that he soon quit it. I took a hand in that myself. That was one of the ridiculous things that was brought about. But a rational treatment of exposed pulps is one that should be practiced by every practitioner of dentistry.

With reference to dentists going to dental depots and buying pulp digestants, I tell you, the dental profession ought to do their own practice, and buy what they ought to have and not buy what they do not need, and it is a mightly good thing to get lessons in buying what you can pay for and what you need. (Laughter.) I am in the game more than I ever was, and I know more about it than I ever did. When men will take a mixture of ten or fifteen different makes of cement that are lying around a dental depot, put them up, and sell that stuff at a dollar an ounce, and two-thirds of the dental practitioners will buy it and by and by want more of it, that kind of thing is deplorable. It is the same way with other things. It would be a good thing for dentists to take lessons on this subject and discuss these matters before the profession before they allow themselves to be imposed upon all the time.

Dr. J. P. Buckley:

It has been a long time since I have listened to the reading of a paper as scientific, and yet as thoroughly practical, as the one which Dr. Logan presented tonight. I am glad that the essayist saw fit to discuss this subject from a pathologic viewpoint. The last time I ever heard that noted surgeon and pathologist, who recently died, Dr. Nicholas Senn, speak was at a banquet at the Alumni Association of which I am a member. He emphasized then the necessity of the dental profession delving more deeply into oral pathology, and I am glad to know that we have some members of our profession who appreciate the teaching of Dr. Nicholas Senn, a great friend of the dentist.

Dr. Logan has discussed this subject from a pathologic viewpoint and has discussed it well. No compliment I might pay him tonight would be so great as the compliment which this audience paid the essayist by the close attention which they gave to what we would ordinarily consider a somewhat lengthy paper.

Now, when it comes to saving the pulps of teeth, Dr. Crouse is right when he said there is no set rule that can be laid down. We cannot follow any rule in our practice, each case, as it is presented, must be studied by itself and treated according to the operator's best judgment. There can be no doubt but what since we have had pressure anesthesia come into vogue, too many pulps have been removed. It seems so easy to take them out, to destroy their vitality, to remove them, and try to fill—although we do not all do so—the root canals.

There are, at least, three factors that should be considered when we attempt to save a pulp. I am talking now of a pulp which is no exposed. When a pulp is exposed, I do not care much whether it is done with a spoon excavator or bur—I do not care whether the blood is bright red or dark—if it is in a tooth in which the roots are fully developed, I would not go very far towards saving that pulp, but when I want to save a pulp, there are three factors to be considered. One has been emphasized by the essayist, namely, the general condition of the pulp itself. I could not begin to describe the various conditions of the dental pulp as they have been described tonight. Another condition, which was intimated in the paper, that must be considered, is the condition of the patient's mouth. Dr. Hopkins of Boston conducted a series of experiments to try to ascertain the virulency of different micro-organisms in different mouths, and in the same mouth under different conditions, and he found that the micro-organisms proliferated more rapidly in neglected and uncared-for mouths, and that their virulency was greatly enhanced. If that is true, and we have these micro-organisms that proliferate so rapidly and their virulency is so great in dentine which intervenes between the pulp and the cavity of the tooth, then we have got to consider them if we have a neglected or uncared for mouth. A third factor that was also mentioned is the general condition of the patient—the general health of the patient. Here we have the general condition of the pulp, the general condition of the mouth of the individual, and we must take into consideration more than we do the general condition of the patient's health, his age, etc. If a patient is suffering with any general disease that interferes with the circulation, such as anemia or chlorosis, the chances are the pulp will die whether at the time it has an active or passive hyperemia because that pulp will not receive the proper nourishment.

When we have decided to save a pulp, there are three things we ought to do. One is, if the pulp is hyperemic, an anodyne should be sealed in the cavity, in order that the pulp may revert back to normal. You have got no business trying to save a pulp which is in a hyperemic condition until it has returned to a normal state. The second thing you ought to do is to sterilize the dentine. That point has been ignored tonight. It is unnecessary to remove all of the discolored dentine. There is a difference between carious dentine and discolored dentine, but that which you leave you want to sterilize. I want to tell you, ladies and gentlemen, that you cannot sterilize it with oil of cloves. There are some microörganisms that are happy in oil of cloves, when they are in test tubes in contact with your remedy, and the same thing holds true with regard to oil of cloves when applied to the cavity of a tooth. Under certain conditions oil of cloves is a disinfectant. If you have a sore on your hand and you apply oil of cloves to it, it is irritating; although it is an anodyne, it is sufficiently irritating to stimulate the animal cell, to wake it up, to give it new life and energy, and if you put life and vigor and energy in the animal cell, the animal cell will take care of bacteria—thus oil of cloves produces asepsis; but when the vegetable cell is removed from the animal cell, as it is when it is in carious dentine, or in a test tube, then I tell you oil of cloves is not a disinfectant, and you cannot sterilize dentine wth oil of cloves. The perfunctory method of sterilizing dentine, as usually done, is not the kind of sterilization we want when we have a pulp we desire to save. Many a pulp has died because of the lack of thorough sterilization of the dentin, which intervenes between the pulp and the cavity. Now, there are many remedies, but there is one remedy the essayist mentioned, which I do not care to emphasize because I suggested it, that will do both of these things; namely, it will allay the irritation when sealed in the cavity and it will sterilize the dentine. Where we have a tooth whose pulp is not exposed, it has an anodyne effect, and it will cause a hyperemic pulp to gradually revert back to the normal, and, at the same time, it will kill, not cripple, or not lessen the activity, not break up the football game of the microörganisms for the time being, but absolutely destroy all the germs in the dentine, and that is modified phenol.

℞ Menthol	ʒj	
Thymol	ʒij	
Phenolis (95%)	fʒiij	M

Thymol has a peculiar but beneficial, favorable action upon animal tissue, and the thymol in the preparation will sterilize the dentine to the degree necessary in these cases.

I do not know whether I understand Dr. Gethro rightly or not. I hope I did not, when he said to put cement in the bottom of a cavity without taking any precautions to keep the phosphoric acid of the cement from further irritating the pulp. If you are going to save these pulps at all, you want to save them for as long a time as possible, and to do this you must take advantage of every possible thing that is liable subsequently to shorten the life of that pulp. If you will take this modified phenol when you have the pulp reverted back to the normal, when you have the dentine thoroughly sterilized—the rubber dam, of course, is on—I don't care how you have gotten rid of the carious dentin, whether with a large round bur, such as I use, or by a spoon. or some other kind of excavator, but when you are ready to begin you filling, if you will take this modified phenol and precipitate calcium phosphate, a fine white powder, and make a creamy paste, and on that paste sprinkle aristol or europhen—iodine compounds, and flow that over the entire bottom of the cavity, covering the entire surface absorbing the excess of the liquid with cotton or bibulous paper, and when it is partially dry flow the cement, you will have prevented the irritation of that pulp by the phosphoric acid. Patients will not say to you, "you made that tooth ache." When I am trying to save a pulp in this condition, I do not want it to ache, and it will not ache if you take the necessary precautions. That is what Dr. Logan had in mind, I take it, when he spoke of the intervening layer over the dentine.

I want to emphasize the fact, again, that there is no rule for saving pulps. If a pulp is infected, as Dr. Johnson has said, it should be taken out. If there is any evidence of degeneration of the structural components of the pulp, it should be removed. There is no set rule for saving pulps. Each case, as it is presented, must be treated at the time according to the operator's best judgment.

Dr. Logan (closing the discussion) :

In connection with my closing remarks, I wish to mention some authoritative statements in reference to the fact that bacteria and biproducts go through normal tissue without pressure. Now, since we have started to put in so many gold inlays, what will probably happen to many of us will be, that we will prepare the cavity, and when there is only a thin wall of dentine between the cavity and pulp and we want more separation, we insert a mass of gutta percha and send the patient away with the result that the patients come back to us with a bad condition of the pulp—a condition of very extensive hyperemia. That is almost certain to happen, and the only way to overcome it is to sterilize the dentine. We cannot sterilize the dentine with oil of cloves. I cannot do it, nor did I speak of doing it with oil of cloves. Sterilize the dentine if it has not been sterilized previously. Put in the sterilizing remedy over the dentine in the deep part of the cavity, with a thin wall of cement over it. You have made your wax impression, understand; you then place the gutta percha, and let the patient be dismissed, and the pressure will not come against the pulp and you will not carry infective material into the pulp. Many of us are going to make this mistake in the near future, if we have not done so already—we are going to prepare cavities and place gold inlays over pulps that are either partially dead or over pulps which have undergone certain tissue changes to the extent that they are going to die, because we can prepare these cavities so easily by this method, and not fully realize that the pulps are not in a normal condition. As Dr. Crouse has said, you want to find out just the exact condition by the response you get when you are cutting and drilling into a tooth. The moment you look into a large cavity and begin to work in it, you may think that it will be sensitive, but it is not, and you must stop right there and test the pulp with both heat and cold, and if you get a delayed response from either heat or cold, go ahead and take out the pulp. But, at the same time, when you are talking about the question of delayed response to heat or cold, remember that secondary dentine may have formed and there is a greater distance between the cavity and the pulp than you think. But always test for delayed response. You need not worry about a pulp that hurts a great deal when you are preparing the cavity. You need not worry about a pulp that is sensitive to heat and cold, but look out for the one that is surrounded with caries and from which there is no response. It means a low vitality of the pulp, and that pulp will die later if you do not remove it now. So in that case be very careful that you do not put an inlay over the pulp that you thought was quiet, and have the patient come back in a week complaining of constant pain. The intervals between pain may be shortened, but the first thing you know, it is sore under pressure, and you must go in and remove that pulp.

Dr. Gethro said he does not use alcohol on top of the modified phenol, or that he does not want to use alcohol at all. I do not put alcohol only where I have phenol. I only put phenol where I have dentine. I do not put it over the pulp. You must sterilize the dentine and, as Dr. Crouse has remarked, you do not need to remove the darkened dentine. If you remove the irritating properties that are contained in the dentine, what is the use of taking it out if it is an advantage to leave it in? Do not be frightened over dark dentine that is sterilized, but do be frightened about removing it if you are going to expose the pulp.

Dr. Buckley spoke of adding europhen to the mixture of paste used in capping the pulp. I did not say much about treatment, but I would not care to put anything in the paste near an exposed pulp which would further irritate it. The remedy that throws off iodine was used for the purpose, I take it, to stimulate the activity of the odontoblastic layer of cells, so that these cells would regain their activity and throw down new secondary dentine between the filling and the pulp. I take it, if the pulp is exposed, or if the pulp has been wounded, it has already all it can stand without putting anything on it to irritate it more.

Dr. Buckley: Dr. Logan misunderstood me. When I spoke of putting aristol and europhen in the paste, I was not speaking of capping the pulp.

Dr. Logan: I stand corrected. If you are going to use that for a cavity lining, it would be a different thing.

With reference to the remarks of Dr. Gethro to the effect that if the pulp has been penetrated, he would not try to save it, but that if the dentine had been lifted away the pulp might be saved, I wish to say I believe that a pulp that has had a curious process present sufficiently long to soften the dentine, so that you can remove it with an excavator, is past saving because of the shock and irritation that have been brought about to the pulp from the softened dentine. I believe every man in this room has exposed pulps, but I wish to say that in those cases where I have been called upon to cap pulps that have been injured with a bur I have not met with failure so far. I do not know what the experience of the rest of you has been, but where I have gone through a wall of healthy dentine into the pulp and exposed it, that pulp has lived. I have not done it every day, so I have not had a lot of experience in this regard. Where I have exposed a pulp by lifting out the dentine, the tissue has been involved, and the pulp could not have lived if I had not exposed it.

Dr. Gethro: Dr. Logan misunderstood me. My statement was that I exposed the pulp from cutting down the sound dentine with an excavator, not carious dentine.

Dr. Logan: You must have had a sharp excavator. I have never had one of that kind. Mine are all so dull that if I can get out all of the soft dentine, I think I am doing pretty well. (Laughter.)

In reference to the case reported by Dr. Crouse, in which there was a chronic disturbance, he was successful in diagnosing which tooth was involved. He could tell which tooth became sore on capping. With an inflammation of the pulp which spreads to the apical tissue, it would be wise to remove such a pulp. It seems hardly possible, yet the history seems to prove it, that in a case of six months' standing, we have the secondary formation of dentine in there closing up the pulp.

If time permitted, I would like to say something about the secondary formation of dentine, tubular calcification, and one or two other things, but they need not now be brought up.

In reference to the statement made by Dr. Gethro that he has never seen acute active hyperemia resulting from systemic disturbance, I would say that probably nearly all of us have had patients come to us this spring with acute disturbances of the pulps of teeth, the origin of which could not be clearly traced at first. They had been suffering in nearly every instance from the grip, or they have come to us to find out what tooth it was that was causing them trouble, and by and by we have found that this trouble of the teeth was due to the grip. Many people suffering from prolonged fevers have lowered vitality. They lose control over their nerves, or they lose control over the calibre of vessels, and with momentary paroxysms of pain acute hyperemia results. When they get over their disease and are built up again physically, the vessels regain their tone through the proper nerves.

I wish to close the discussion by quoting a brief statement from Miller on "Micro-organisms of the Human Mouth."

"According to Arkovy, Rothmann, and others, an infection of the dental pulp may occur while it is still protected by a perfectly healthy layer of dentine. Under such circumstances Arkovy repeatedly observed the distinct phenomena of pulpitis and drew therefrom the conclusions that acute pulpitis must be referred to a much earlier stage of dental decay and dental infection is deeper than heretofore supposed.

The microscopical examination revealed numerous micrococci in the connective tissue at the base of the odontoblastic layer, on the nerves, etc. Comparative examination of irritated pulps revealed no invasion of micro-organisms. On the strength of these facts Arkovy assumed that a pulpitis due to systemic causes is not only possible, but actually occurs, and that the name, 'Pulpitis acuta septica' is appropriately applied. I (Miller) regard it as highly probable that bacteria found in decaying teeth may pass through the tubules of a thin layer of sound dentine and encroach upon the pulp; that they may, however, pass through thick layers unless in very exceptional cases seems to me doubtful; that they may pass through the entire thickness of the solid dentine is quite out of the question."

WINNIPEG DENTAL CLUB.—JANUARY MEETING, 1908.

DISCUSSION OF DR. NEWKIRK'S PAPER ON "HAND TOOLS."

DR. G. F. BUSH:

Mr. President—In opening the discussion of the paper just read I wish first of all, to say that we, as a club, have been highly honored in having had a man of Dr. Newkirk's ability take the trouble and time to prepare such a paper to be read before us.

This article has interested me immensely throughout, going back as it does to the history and evolution of tools. The touching observations on the ingenuity of some birds in building their nests, and reference to "Hogarth's line of beauty "naturally strikes a responsive chord in the heart of anyone who, like myself, has been accused of being an artist.

The practical side is no less interesting, and makes me think of the days when we were five hundred miles, or more, from the nearest dental depot, and we were consequently thrown largely on our own resources for the repair of anything, from forceps to an explorer. What a time we used to have when the making of new and repairing of old instruments was taken in hand. I am sure that many of you would stare if you could only see some of the fearful and wonderful shapes and forms that were then evolved. However, the useless styles were soon discarded, and many useful ones retained.

The principle which Dr. Newkirk speaks of, that of having the point closely in line with the handle, was early followed by myself, although I was ignorant of its being a principle, simply finding the tools of this form were most useful.

This paper has set me thinking, and it may be possible that we are beginning to rely too much on that excellent institution, the dental depot. There are both in my laboratory and cabinet many instruments made by myself that I would be very sorry to have to do without, and as Dr. Newkirk has intimated, there is a decided pleasure in using an appliance into which you have put some thought, a pleasure which increases as the years pass on.

I am aware that it is an unwritten rule of this club that a paper shall be pretty well pulled to pieces and discussed, but as there is nothing in this case with which I can conscientiously find fault, I will thank you for the patience you have manifested during my wanderings, and only wish that Dr. Newkirk were, himself, here, that I might personally thank him for the pleasure he has afforded me.

Dr. G. J. Clint:

I wish I had a better memory for names than I have. I remember some years ago at a large convention held in Ontario, that someone, whose name, as I said before, I cannot remember, exhibited a remarkable collection of forceps and other articles carved out of wood with an ordinary jack-knife. The object of the exhibitor was to show that mechanics were born, not made, and that only such should practice the profession of dentistry.

In the matter of tempering I have frequently found that plunging the heated instrument into beeswax or oil has produced a temper of sufficient hardness.

Many old operators of repute have been in the habit of using very few instruments and a large proportion of those being home made. But at the present day there seems to be a tendency to use too many instruments.

In conclusion I would say that this paper strikes me as one of great value, and we are much indebted to Dr. Newkirk.

Dr. M. H. Garvin:

I am sure we are very grateful to Dr. Newkirk for favoring us as he has done tonight and I only wish he were here to actually see the enthusiasm with which his paper has been received.

There is little room for criticism in such an able paper, but in perusing the subjects discussed let me speak out my thoughts for a moment. I think there is no economy in making one's own instruments, but of course there is no objection to making them for the pleasure there may be in it. I prefer to replace those instruments which are commonly used and rather easily broken by keeping duplicates in the cabinet ready to use. I think that time can be spent in many ways to better advantage than making one's own instruments.

The principle of having the point of blade of the instrument on a line with the handle is an admirable one and should ever be kept in mind in purchasing instruments, particularly pyrrohoea instruments, the use of which is especially trying to the muscles of the hand.

The discussion of the paper throughout was very general, most of the members taking part in it more or less, and a hearty vote of thanks was passed for the essayist's kindness in sending this paper.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FOURTH ANNUAL MEETING, SPRINGFIELD, MAY 12-15, 1908.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

Dr. M. L. Hanaford, of Rockford:

I consider it an honor to be called upon to open the discussion on an address which breathes such good nature, kindly cheer, and augurs well for the success of this forty-fourth annual meeting of the Illinois State Dental Society.

I think it is a good plan once a year to get together and tell each other how glad we are to see each other, and even say we love each other. I am proud of the fact that the best friends I have in the world are dentists and members of this Society. If I want favors of any kind, I should go to dentists. I think it is a thing we ought all to be proud of. It is not a bad thing to throw bouquets at each other once a year; flowers upon one's desk instead of flowers at one's funeral. It does not matter if we said the same thing before and in the same way. We say "good morning" 365 days in the year. We tell our wives and children we love them in the same way, and why should we not tell each other here that we are glad to see each other year in and year out.

Those of us who have attended the meetings of this Society know the immeasurable benefits to be derived, but it is hard to make those appreciate it who have not had experience. A young dentist said to me the other day: "I wish I could go back to college now and take a post-graduate course of instruction; I believe I could learn something." I said, "Yes, doubtless that would be a good thing to do; but I will tell you a better thing—that is, join your local dental society; attend its meetings and the meetings of the State Society, and there you meet the best men of the greatest skill and get the benefit of their instruction and help." I have not yet gone to a member of this Society for help, or professional advice, that I did not get it cheerfully.

Dr. Johnston has referred to a larger membership throughout the state and to the work of the component societies. It is perhaps a little surprising that the membership has steadily increased year after year. It shows a good deal of earnest attention and hard work. It shows also that the men throughout the state are forgetting their differences and their jealousies. That is one of the most important things which these component societies are doing. They get together and they put jealousy out of business. They find their professional brother is not their enemy. I have often heard it wished by the members of other professions that they might have in their professions the same cordiality which dentists seem to have, and I have often replied: "You could have it if you stopped waiting for all your men to become perfect. You can never get together a company of men who will all be equally honorable."

Dr. Johnston made some suggestions for the future work of the Society and spoke of Study Clubs. I think it is possible the work of the component societies might become a scattering fire, so to speak; but, after all, I think the old tried method of lecture, clinic and demonstration is perhaps the best. In small societies it is very easy for every one to see the operations that are performed, ask questions, and, at the same time, the details can be worked out by every man in his own way, with his own equipment of brain, and equipment of office; so, it appears to me, the work of the society in that regard should go on about as it is.

In the matter of having a committee on remedies, I should heartily be in favor of that. The use of remedies by the rank and file of the profession is largely empirical and always will be. We have to take the advice of men like Dr. Peck and others that a certain remedy will do a certain thing. But such a committee might be a good thing.

I congratulate the Society on its President's address, and I am sure we shall all have a very happy and profitable time.

Dr. S. F. Duncan, of Joliet:

I am sure we all enjoyed President Johnston's address. We all realize that our existence as a state body depends upon the component societies, and only as we can keep up interest in them can we keep up interest and progress in our state organization.

He spoke particularly of Study Clubs being formed. I do not know very much about them, but I have been persuaded for some time that we ought to take up some particular form of study or work in our local societies, in order to promote the interest of the organization. When I discussed the President's address last year, I think I pointed out the necessity of appointing a committee to outline a course of work for the local societies. During the past year the American Medical Association has adopted what it calls a post-graduate course for local medical societies. I know in our own city the medical men are doing work along this line. They hold meetings once a week in this study, and I know they are taking great interest in the work. I have two physicians—young practitioners—in the office with me, who spend all of their leisure time on that work, and they speak highly of it. I hope that this Society may see fit to take up something along that line. Usually, the local dental societies meet, the members have a good time, jolly each other about different things, discuss matters in a desultory way, and do not get much benefit from it. That will last for a while, but won't do all the time. The interest of the local societies must be kept up. We have got to get down to hard, solid work.

Dr. Edmund Noyes, of Chicago:

I was very glad to have the special suggestions in the President's address supported as they have been by Dr. Duncan, and I suppose that the idea of our President was not to put the Study Club in the place of the work which our component societies are doing, but to supplement their work in this way by inducing the members of the component societies to take up some subject pertaining to dentistry which all the members are more or less interested in, and go into that subject, so that they may feel at the end, when they have finished and are ready to take up some other subject, that they are conversant with about all the dental profession knows on that particular subject. It would enable those men to feel that in this one little point or subject they were the peers of the great men in the Society in regard to knowledge and understanding. It is an ambition which would appeal, I think, to every young man in the profession if presented to him rightly, and I think the President must have had this in mind as a supplement, and not a substitute, for the present forms of work and interest in societies. I don't know how practicable it is. It is possible that Study Clubs may require for leaders such tremendous enthusiasts as Dr. Wedelstaedt of the Black Study Club, but I believe it can be done in almost any component society.

In regard to the other suggestion about therapeutics and remedies, I suspect the principal idea in the President's mind was—knowing that we are all empirics to a very great degree—to substitute the recommendation of a scientific and competent committee in regard to remedies to be used, in place of the recommendations of a hundred different, personally interested manufacturers. He knows—and we all know—that most of us use remedies upon somebody's recommendation, and his idea is to have the recommendation that comes with strongest force and greatest persuasiveness emanate from competent men instead of from interested parties.

Dr. G. V. Black, of Chicago:

The recommendations in this very interesting address are good, and will benefit us.

In regard to the proposition for study clubs, I think we should have them. They have done well when they have been kept up, and one of the features usually found in successful study clubs is one or more enthusiastic persons who become able to command and direct affairs. That seems to be essential. One of the important directions of a Study Club should be that of good fellowship. There is perhaps no association of men that does well without a large degree of good fellowship among its members. Good fellowship should be cultivated for the intrinsic benefit of it. It should be one of the features of all of our component societies and of this society as well. We can scrap among ourselves as much as we please, but when the scrapping is over we are better friends than we were before. The feature of society work which is neglected more than any other is the literary feature. We are not sufficient readers of our own literature, which has become wide and large, and there is room for a large study through the literature of what men have done. This is excellent work for Study Clubs. There is very much yet to be done in the development of dentistry—more things are apparent today that require study and need devolopment and original research than ever before. Therefore, I say, let our component societies get to work, bring us here the results of their labors, and we will not only have a larger attendance, but a better and broader fellowship with each other, and in this way we will have extended and continually have broadened the knowledge of our specialty.

Dr. George W. Cook, of Chicago:

I think Dr. Black emphasized one of the main points in the

President's Address, namely, that of studying what has already been done. There are very few dentists, in comparison with the number of men who are practicing the mechanical manipulations of their profession, who study what others have done on any particular subject. In conversing with dental practitioners all over the country it is surprising to find how few men are familiar with the things that have been done in orthodontia, in metallurgy, in chemistry, etc. Very few read such literature at all, and I believe the suggestion in the President's address of a Study Club is an excellent one.

As for new remedies, it is a question whether we would ever get any except those that are sold by dealers. There has been a great deal of literature published on this subject. Various members of the profession have made suggestions of many remedies that would be useful to the dental profession, but many dentists prefer to buy from the dental supply houses remedies that are a sure cure; it does not matter what they are used for. (Laughter.) We find a great many remedies suggested for mummifying the pulps of teeth while we are asleep, and they will stay dead until we are probably away on our vacations, then create trouble. I recall a little Study Club in Chicago composed of four or six members; it is doing good work. This club meets once a week or every two weeks. Its members read dental articles of various descriptions, covering the different phases of dentistry, and discuss them; and out of this club grew the idea of cataloguing many of the journal articles and of getting them systematized; and from that club, if I am properly informed, grew the reorganization of this State Society, which is the biggest thing on earth.

Dr. J. G. Reid, of Chicago:

I want to say a few words in relation to the importance of the coöperation of the component societies with the Examining Board of the state. If you expect the proper support through your board, you are expected individually to give some service yourselves. The work of the Board is largely done by one individual. The man who occupies the position of Secretary of the Board comes pretty nearly being all there is to the Board when it comes to the work, and I want to tell you, my friends, in a humble way, it is not a very pleasant position to occupy. It requires considerable fortitude to bear the cussings which he gets undeservedly, and maybe sometimes deservedly. If you expect to get the best efforts from the State Board, every man in this Society has got to do something himself. As an illustration. You have an illegal practitioner located down in Egypt, or some other distant locality. A complaint comes to the Board that So-and-So is not a qualified or legal practitioner. What is the result? You have to sit down, correspond with the complainant and tell him that he must do so-and-so. He replies: "I don't want my name mentioned in connection with the case. I don't want anybody to know that I have called attention to an illegal practitioner in my vicinity." Who shall the Board get to help in this matter? Nobody responds. Next thing, there comes back a letter stating, "I will report you to the Governor; you are a lot of grafters," etc. I have such letters as evidence to show you, if necessary. The Board is always ready to do anything that is proper and right under the law, but it must have your assistance, and if you are ashamed to do it individually, let your component societies do it. Let them say, "Here, gentlemen, we want this done, and we will be sponsors for it." I never saw but one man who had the nerve to get up and say, "I am going to do this," and that is Dr. Conroy, of Belleville, who got rid of illegal practitioners in his town. He had the nerve, and simply did his duty. I want all of you to do likewise. If you will do that, it will have a powerful influence on the legal standing of our profession in the state.

I regret very much to have to speak of these things, but it is necessary, and I want to impress on you the importance of the fact that you must aid the Board in its work, and if you do so great things will be accomplished.

Dr. Johnston (closing the discussion):

I wish to thank you for the kind reception you have given my address.

With reference to the remarks made by Dr. Noyes, I will say I used the word "combined" in speaking of Study Clubs with the component societies. I did not mean to separate them in any way, but to combine them.

THE DENTAL COLLEGES OF AMERICA.

Dental Department, Washington University, St. Louis, Mo. First Class Graduated 1867. Total Number of Graduates to January, 1908, 690.

St. Louis Dental College, St. Louis, Mo. First Class Graduated 1896. Total Number of Graduates to January, 1908, 358.

Atlanta Dental College, Atlanta, Ga. First Class Graduated 1894. Total Number of Graduates to January 1908, 840.

THE DENTAL COLLEGES OF AMERICA.

Western Dental College, Kansas City, Mo. First Class Graduated 1891. Total Number of Graduates to January, 1908, 741.

Kansas City Dental College, Kansas City, Mo. First Class Graduated 1882. Total Number of Graduates to January, 1908, 568.

Southern Dental College, Atlanta, Ga. First Class Graduated 1888. Total Number of Graduates to January, 1908, 565.

Dental Department, Barnes Medical College, St. Louis, Mo. First Class Graduated 1904. Total Number of Graduates to January, 1908, 26.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

THE 1908 MEETING OF THE ILLINOIS STATE DENTAL SOCIETY.

This meeting, which was held at Springfield, May 12, 13, 14, 15, was one of the best the society ever had. The character of the papers was much above the average of society papers, and the interest throughout was keen and sustained. We never remember attending any single session of a society which from beginning to end so absorbed the attention of the audience as did the one on Tuesday evening, when the symposium on filling materials was presented. There was not a moment of that long session in which the interest lagged, and at times the tension grew very acute. There were six short ten-minute papers in the symposium and those with the discussions held the audience till the janitor adjourned the meeting, by announcing that the lights would be turned off.

The session on Thursday afternoon, when the questions of component societies, advertising, and the prosecution of illegal practitioners, came up for discussion, following the reading of Dr. Hood's paper was the liveliest we have ever seen. The paper and discussion occupied the attention of the society the entire afternoon, and the report of all the sessions will be well worth reading.

The clinics excited the greatest interest from beginning to end, and the entire meeting left a most vivid impression on those in attendance.

One of the beautiful features of the meeting was the fact that at all of the sessions a fine portrait of the patron saint of the society, the late Dr. Geo. H. Cushing, was on exhibition in the hall. This seemed to lend inspiration to the members, who knew him well in the earlier days of the society, when he was always in attendance, giving the benefit of his most excellent judgment in the development of the society. In this connection it may seem profitable, as an example to others, to refer to the fact that from the organization of the society up to the time of his removal from the state—a period of thirty-five years—he never missed a meeting. This is a record for faithfulness well worth emulating.

The society now has a membership of about 1,500, and this will be materially increased in the near future, showing a constantly increasing membership and sustained interest in the work which is most encouraging. The plan of reorganization inaugurated several years ago has now been demonstrated to be a pronounced and permanent success, and once more it should be stated that for this success the society is indebted to the organizing genius and ability of the chairman of the committee, Dr. A. D. Black, whom the society at its recent meeting very justly honored with the presidency.

THE EDITOR'S DESK.

PARADING ONE'S AILMENTS.

It is astonishing how many people really enjoy poor health At least, they would appear to enjoy it from the way they roll each malady as a sweet morsel under the tongue. Go into any society where conversation is free and the chief topic is of the ills which flesh is heir to—particularly the flesh of those who are taking part in the conversation, or of some one they know, or of some one they have heard about. People are cosmopolitan in this respect—and liberal. They can discuss in the most generous manner the peculiar way in which Nebuchadnezzar Jones, who lives over in the next county, and whom they probably never saw, strained his great toe in an attempt to reach the garret with a stepladder. Or they can tell about their own petty mishaps with a gusto that would do justice to a worthier cause.

They love to dote on the ills of life, and are perfectly extatic when they can recite the nauseating details of the most loathsome disease. In their minds a man is great only when he has been monstrously ill, or had some affection more profound than other people. To be sick is to be famous—and by the same token that is the only claim to distinction that many people have.

Why not "cut it out"? If you only knew it there are very few people who are really interested in your small ailments, and if your ailments are serious I know of only three classes of people to whom they appeal, the life insurance man, the physician and the undertaker. Their interest is of such a nature that you are not likely to be flattered with it if you knew it, and so it is best to keep these things to yourself. A constant complainer is a nuisance to everyone around him.

And this talking about disease all the time generates disease, because many of our maladies are purely mental. Ingersoll said that if he had the regulation of things he would make good health catching instead of disease, but in this he was one degree off in his reckoning. Good health is catching just as surely as is disease, and it is the simplest matter in the world to learn how to catch it. But you cannot do it by magnifying your ills and bragging about your complaints—as if they lent distinction to your individuality.

I read somewhere about a cheery old man who was asked why he never complained of being ill. "Because I am ashamed of it," he answered. "If I am ever ill, I know it is because I have violated some of the laws of nature and so I am deserving of censure rather than sympathy." This old man's philosophy may have seemed far fetched, and yet it is immeasureably a better philosophy than the one of laying all our petty ills at the door of a kindly providence, and then piously holding our hands to high heaven and boasting martyr-like of our unique affliction.

Bah! If you are sick do the best you can, but don't prate over it. If you must talk about your troubles, tell them to the physical policeman—the doctor. He will listen to you—sometimes—because he has a money interest in it. But between you and me he is half the time thinking what a lumbering idiot you are and "what fools these mortals be."

Don't parade your ailments, and you will be healthier and happier. So will those who are obliged to listen to you.

DOMESTIC CORRESPONDENCE.

MEDICINE AND DENTISTRY.

Chicago, April 18, 1908.

My Dear Editor: All the talk about the dental profession being a specialty of medicine and of the dentist being on a par with the physician makes good material for argument, but to me it seems that energy is wasted. There should not be any debate on the subject at all, that is so far as determining the classification of the dental profession. The average dentist actually relieves more pain in a day than the average physician does in three days, and does not resort to the heart depressing alkaloids to do it, either. But why not drop this claim about being a specialty of medicine at least until we are enabled to procure 95 per cent carbolic acid at the drug store without a physician's perscription?

E. C. Thompson, D. D. S.

SUGGESTIONS AS TO THE BEST METHOD OF USING THE TAGGART INLAY WAX.

Editor Dental Review. May 18, 1908.

I hear from quite a number of dentists that they have some difficulty in using the inlay wax that Dr. Taggart has put upon the market. I think more explicit instructions in the use of this wax would not be amiss, for it does not seem to me that anyone who is doing inlay work is not living up to his possibilities if he does not secure beautiful results with it. To me it seems to be perfection in that it will not yield or bend when at the temperature of the mouth and therefore one can proceed with the work with the delightful assurance that the wax has not become distorted in its removal from the cavity. It may be admitted that there is a "just right" point at which the material works best, but a little practice and experience will fit you for getting that point every time. The wax should be heated in water at the temperature suggested in the instructions and it should be brought to the chair in a small receptacle containing the hot water and carried quickly with the fingers to the cavity. My assistant has learned to tell the "just right" point by the slight change in color that comes with the proper heating. Passing over the instructions given for the forming of the wax in the cavity another very comfortable feature is that on account of the unyielding nature of the wax when cool, much of the carving of cusps is most easily accomplished after the sprue is imbedded in the wax inlay. The sprue is held in the fingers of one hand while the carving instrument is held in the other. The sprue that comes with the Taggart outfit is of sufficient bulk to make the hold to the wax quite strong and tenacious. This permits of putting on the finishing touches out of the mouth.

I believe failure has come to some largely because they do not keep the inlay wax in the hot water until brought to the chair. If the wax is taken in the fingers in the laboratory and carried in this way to the chair it naturally loses its heat and becomes too stiff.

What a boon to humanity that such a method of making gold inlays was discovered. It seems to me too much praise cannot be bestowed upon the genius who gave this method to the world. Chauncey Depew was right when he said, "A little 'taffy' while living is much better than an epitaph when dead."

A. W. McCandless.

BOOK REVIEWS.

LECTURES ON GENERAL ANESTHETICS IN DENTISTRY.

BY WILLIAM H. DE FORD, B. A., D. D. S., M. D., M. A.

[Published by John T. Nolde Mfg. Co., St. Louis, Kansas City, and Mexico City.]

The object of this book is, according to the author, "to give the busy dentist a working knowledge of such general anesthetics as can be used to advantage in daily practice." It is divided into twenty-two lectures, and considers all of the various phases of anesthesia with the different agents such as nitrous oxid, ethyl chlorid, somnoform, chloroform, and ether. There is not a dull page in all the 297 which make up this book. Whether or not you are willing to follow the author to the full limit of his enthusiasm in the administration of some of the agents recommended you are at least certain that he is familiar with his subject and that he has done what he says. He makes a just arraignment of colleges, medical and dental, in all those instances where they do not give adequate practical instruction in anesthesia, and urges that the technical phase of this subject be thoroughly taught to students. We have only one suggestion to make —that in future editions the word "anæsthetics" be made "anesthetics," in conformity with modern usage.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street Chicago, Ill.]

Acidity of Saliva:—Saliva from the parotid gland is always more acid in reaction than the saliva from the other salivary glands, and the submaxillary gland alone normally secretes approximately three times as much saliva as the parotid gland, which is a potent factor in lowering the acidity of the mixed saliva over the higher acidity of parotid saliva.—*J. Newton Roe, Valparaiso, Ind.*

Treatment of Puncture From Instruments:—I have been punctured with instruments many times, and it is my invariable custom to drop the instrument at once and grasp the injured member above the puncture and hold my finger in that position until it bleeds profusely. I get as much blood out of it as I can and possibly that is the best thing that can be done under the circumstances.—*J. G. Reid, Chicago.*

Remove All Infective and Broken Down Roots:—I have been impressed with the danger of leaving infective and broken-down roots in the mouth with canals untreated and unfilled. I have sanctioned the retention of these roots in the mouth when patients were reluctant to have them removed, and that has been, I believe, the practice of many others besides myself, but I now see a danger of infection in allowing them to remain.—*J. W. Wassall, Chicago.*

A Frenzied Fad:—My gold fillings, after a year's service, looked better to me than my gold inlays, and I am not a novice with gold inlays. I know full well it takes nerve to say that which may ever so lightly intimate anything derogatory to so frenzied a fad. I know the vast field there is for the gold inlay, but when it comes to throwing away my pluggers, mine are right where I can reach them and few are the days when they are not used.—*E. S. Barnes, Seattle, Wash.*

Producing a Flat Surface on the Rims of Base Plates Built Up for Bites:—Build the wax to a uniform thickness on the ridge to about the height you would have the teeth, and then add a strip of thin sheet wax over all the rim. Invert the plate, while the wax is soft, and press the rim against the polished surface of a glass cement slab which has previously been moistened with water. The uniform contact between wax and glass can readily be seen through the glass.—*Charles J. Alleman, Church Point, La.*

Treatment of the System in Alveolar Abscess:—In dealing with alveolar abscess it should be remembered that we have to treat a part of the general system, and while it is positively essential to a cure that the local needs should be met, it is also well to look to the general condition of the patient, and administer proper treatment according to the indications of the case. Pus formation usually shows itself by a rise in temperature, and the use of a clinical thermometer should be encouraged.—*Charles P. Pruyn, Chicago.*

Disinfecting Carious Tooth Cavities:—From my earliest years of professional experience, it has been my habit to wipe out the cavity as soon as the rough excavating has been done, with carbolic acid. I have never done this from a purely scientific standpoint, but I have done it because it seemed to me a most excellent local anesthetic and I could excavate the cavity with less pain. That being my regular habit, I have had less infection, because I know it must be detrimental and extremely careless not to wipe out such a cavity.—*E. J. Perry, Chicago.*

Accessibility as a Guide in Restoration:—In many instances accessibility must be the guide whether we are to make a gold foil filling or an inlay, and it is something in which the personal equation enters very largely. Cavities that are accessible to one operator are not so to another, and as a man's skill increases he will find himself making operations in locations which would have been impossible for him to make a year or two before. The size of the opening of the mouth, the flexibility of the lips and the position of the teeth in the jaws should all be considered. If the cavity can not be made so that every part of it may be reached and the correct line of force applied to the gold foil, do not make a foil filling, make an inlay.—*C. E. Woodbury, Council Bluffs, Iowa.*

To Prevent Cement, Gutta Percha and Temp-Stopping From Sticking to Instruments:—Take an ordinary small shallow cold cream jar with a metal cover which screws on (such as druggists use for putting up salves, etc.). Cut a hole in the metal cover, size of a dime. Place loosely over outside of cover a piece of chamois skin and bind around edge of cover with dental floss. Pack cotton through hole in cover thus making a pin cushion affair. Saturate the cotton with olive oil or Black's 1-2-3 or any oil. Replace cover on jar and keep within reach when using any of these plastics. A touch, or slight rub of the instrument on the chamois will take up enough of the oil to prevent the filling material sticking to the instrument and yet not enough to mix in and contaminate same.—*T. J. McCracken, Portland, Oregon.*

Infection From Carious Teeth:—The observations that I have made lead me to consider that the bacteria that are constantly present in badly decayed teeth are of an extreme virulent nature; especially is that true of the bacillus dentalis, the streptococcus and staphylococcus. In carrying on experimental work I have attempted to determine what agent could be introduced as a disinfectant in the cases in which infection had been introduced. Among a large number of agents that are classed as antiseptics and disinfectants I have come to look upon chinosol as first in the list to be introduced into the tissues if accidental inoculation should occur. Trikresol (at the present called phenol), is the next agent in efficiency. But it is important that these agents should be introduced immediately or as soon as possible after the accidental inoculation.—*George W. Cook, Chicago.*

Lower Cast Metal Plates:—For many years I recommended the use of cast metal plates. The second plate I made for myself was one of them. After having it in for a short time I went into the laboratory and leaned forward to speak to a student and the denture slid forward, because on the flat jaw there was nothing to resist the weight. That night, when lying down, it slid into the cheek, so I had no further use for it. The problem is the excessive absorption of the lower jaw until, in my own case, there is but four-sixteenths of an inch of bone left in the region of the first molars. In addition to this, there is often a flexible condition of membrane over a considerable portion of the jaw. A plate constructed for such a jaw will not prove at once comfortable, when the pressure of the muscles is brought to bear upon it. My experience has fully demonstrated to me that a vulcanite plate is just as good as anything that is worn on the lower jaw.—*L. P. Haskell, Chicago.*

Odors in the Dental Office:—The odor of drugs usually suggests to the patient entering the reception room that someone has undergone, or is undergoing treatment and instantly a fear of the sitting is inspired. The habit has grown upon graduates in dentistry, and even the more advanced practitioners, that it is policy to have their offices in a suite of rooms, part of which is occupied by a physician. little realizing that most,. if not all, of the odor of drugs originates in the inner office of the physician. Dentists usually try to keep their offices free from any offensive odors, and it is the exception to find a dental office permeated with the odor of suggestive drugs. The odor of medicines in a dental office is there through carelessness or for advertising purposes. It might seem admissible for a physician's office to become permeated with the odor of medicines because he is using a variety of drugs for the treatment of his various pathological conditions and his patients come to his office expecting to meet such odors, consequently there is no shock to their nervous system, but with the dentist it is different. It is difficult for us to eliminate the fear, and stimulate a desire for our services in the minds of the public, and they usually refuse to seek our aid until compelled to do so by suffering, and very often not until the case has reached a stage where the "Cure is worse than the disease." Our offices should be designed with this prominent fact in view and by a little care we may do our part in eliminating much of the horror of the dental office.—*G. W. J.*

MEMORANDA.

MEMORIAL TABLET.

A memorial tablet to the late Dr. J. Bond Littig was unveiled at the class day exercises of the New York College of Dentistry, April 25, 1908.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia, Music Fund Hall, 808 Locust street; Pittsburg, Pittsburg Dental College, Pride and Bluff streets, June 10-13, 1908. For application papers or information address Dr. Nathan C. Schaeffer, Secretary Dental Council, Harrisburg, Pa.

IDAHO STATE BOARD OF EXAMINERS

Will hold annual meeting in Boise, June 25-27, 1908. Applicants must bring operating instruments and engine. All dentists contemplating locating in Idaho must be present, as at this examination we do not grant temporary licenses, and all must take examination.

E. S. Burns, Secretary, Boise, Idaho.

DENTAL PARLORS KEPT OUT OF WEST VIRGINIA.

The Parkersville, W. Va., *Sentinel* publishes the statement that certain dental parlors which were to be opened there were closed when the proprietors learned that the law provides that dentists shall be registered in the state, and also dentists advertising under a business name shall publish the names of all persons who are connected with the firm.

INTERSTATE DENTAL FRATERNITY.

The Board of Governors of the Interstate Dental Fraternity will convene for the annual business meeting of the order in Boston, at the Brunswick, Boylston street, July 24. The annual banquet will occur during the week and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the Fraternity will meet in large numbers on this occasion.

Dr. R. M. Sanger,
East Orange, N. J. National Secretary.

OHIO STATE DENTAL BOARD.

The regular semi-annual meeting of the State Dental Board of Ohio will be held in Columbus, June 16, 17 and 18, 1908. At the present time, the Board cannot accept a license from the Board of Examiners of another state. Applications must be accompanied by the fee of twenty-five dollars ($25.00) and should be in the hands of the Secretary not later than June 6. For further information and application blanks address the Secretary,

F. R. Chapman, D. D. S., Secretary,
305 Schultz Building, Columbus, Ohio.

WYOMING STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wyoming State Board of Dental Examiners for examination of candidates for license to practice dentistry in the state of Wyoming will be held on the 1st, 2d and 3d days in July, 1908, at the senate chamber, Cheyenne, Wyo. Candidates coming up for examinations must be graduates of a reputable dental college, recognized by the N. A. D. E. The fee of $25.00 must accompany the application and be in the hands of the Secretary ten days before the examination. For further particulars apply to **Peter Appel, Jr., Cheyenne, Wyo.**

RECENT PATENTS OF INTEREST TO DENTISTS.

882,879. Machine for boxing toothpicks, C. C. Freeman, Dixfield, Maine.
883,106. Dental appliance, C. C. Galloway, Washington, D. C.
882,711. Dental instrument, W. B. Pearsall, Hampstead, London, Eng.
883,055. Dental impression tray, H. F. Smith, Seattle, Wash.
883,382. Removable dental bridgework, E. C. Bennett, New York, N. Y.
883,232. Dental mouth prop, N. L. Polinger, New York, N. Y.
883,592. Dental cavity-impression tray, T. C. Trigger, St. Thomas, Ont., Canada.
884,311. Press for swaging seamless crowns, W. G. Bridge, Boston, Mass.
884,087. Holder for dental flasks, F. Groshans, Baltimore, Md.
884,159. Dental plate, E, A. Jackman, Hartington, Neb.
884,977. Crown and bridge work, C. M. B. Boos, Muscatine, Iowa.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

OBITUARY.

DR. HOWARD N. LANCASTER.

The many friends of Dr. H. N. Lancaster of Chicago will be shocked to learn of his death by suicide on May 24, 1908. The cause was given as melancholia brought about by persistent ill health. Dr. Lancaster was a very promising young man of more than ordinary talent. In addition to his professional attainments he was a prolific writer of prose and verse for the daily press and the magazines. He was bright, amiable, cheerful, and apparently possessed of the sanest philosophy and the greatest optimism. It is therefore a real surprise to be obliged to record his death under the painful circumstances, and we extend to his family and friends our heartfelt sympathy.

THE

DENTAL REVIEW.

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QUICK CONTROL OF PAIN AND DISEASE WITHOUT DRUGS BY USE OF THE LEUCODESCENT LIGHT.*

BY F. E. RAICHE, D. D. S., MARINETTE, WIS.

I believe I come before you with something comparatively new in dental therapeutics.

I had read a few times of how pain was quickly controlled and pus formation checked by the application of electric light, such as blue light, Finsen rays, combined rays or leucodescent, etc. I then read up all I could find on light therapeutics, including the X-rays, and decided to try the leucodescent, as it is free from ill effects, such as burning, which is a decided point against the X-rays, and I dropped the blue light because it was not as powerfully germicidal as the leucodescent.

Several authorities claim that it is the blue, violet and ultraviolet rays in sunlight, and not the heat rays, that have a destructive action upon putrefactive bacteria. This range in the light spectrum is fully covered by the leucodescent light. These are powerfully germicidal, destroying the various pus germs and practically all other pathogenic bacteria, without injury to normal tissue cells.

The violet rays are also powerfully anodyne, and in no way injurious, as is the case with narcotics.

In neuralgias and acute inflammations, the pain-relieving action of the leucodescent light is one of its most valuable qualities. Inflammatory conditions, local or deep seated, can be nicely controlled, because the rays relieve congestion and prevent stasis by restoring equilibrium and toning up the tissues.

The *Dental Summary* of September, 1904, contains an article by Dr. Arthur E. Peck of Minneapolis on the use of this light, in which he says he cured headache for a patient in seven minutes, and a severe neuralgia of his own in seven minutes. He treated pyorrhea successfully, stopping suppuration in a few treatments and reduced the swelling and pain from extraction infection with the light only. It was this article that caused me to decide on the leucodescent lamp.

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*Read before the Fox River Valley Dental Society.

At just about the time I was studying on the subject I got an epidemic of severe cases of suffering and ordered the lamp on short notice and here is the way I used it:

The first case was an impacted third molar, causing suppuration on the buccal side between second and third molars. Jaw was largely swollen, teeth closed and set, pain intense. Had not been able to open mouth wide enough for solid food for a week. Physician could not relieve pain with the usual narcotics. He was sent to me to extract the tooth if I could open the jaw. I placed him under the light twenty minutes, which relieved him entirely of pain, and the hard lump on jaw softened. After three days' treatment twice a day he could open his mouth to normal. I opened abscess, and with continued light treatments and washings I cured the case without extracting the tooth and his suffering ceased after first application of the light.

Case 2. A blind abscess over upper central, face swollen and aching severely. I anesthetized with gas and lanced gum and opened tooth. After he awoke I washed through the canal, which gave him great pain. A few minutes under the light relieved him. Upon exploring this canal I found my broach readily reached about three-quarters of an inch beyond the root, and when I pushed in the lance it dropped into space above the tooth. My only treatment after opening was washing a few times with glyco-thymoline and light treatments daily for a week, then every other day for a week, and weekly for a month, when I discharged him. This surely was a good test case, as remember my only treatment was washing and the light. I purposely avoided using cauterizing, drugs or opening to cut away dead bone, depending on the light to assist Nature to take care of it.

Case 3. Blind abscess over upper lateral incisor, a sound tooth and very sore to touch. Placed under light and after five minutes' exposure was able to drill through tooth without pain.

This shows the powerful anodyne effect and this is where I very often use it. It is well worth having if it will enable us to work on sore teeth without pain.

Case 4. In one severe case of pyorrhea a swelling developed midway between the lower second and third molars. I opened and curetted a little, scaled the roots of all teeth affected, there being about a dozen, washed the pockets and then used onl ythe light and glyco-thymoline daily on the start, gradually diminishing treatments until after about a month, when the mouth looked fine.

That patient told others that I did wonders for him. Since I gave him that treatment about a year and a half ago he has dropped in every few months to get a light bath to keep the gums in good condition. Last winter when I gave him a treatment he had about a dozen boils on his neck. I applied the light to those twice and they disappeared. Last week I cleaned his teeth and found not a sign of pyorrhea.

I have cured many cases of severe pain and stiff muscles from erupting third molars with just a few applications of the light. Some of these were accompanied by suppuration caused by the pressure. I lanced and washed them, injected a drop of saturate solution of camphophenique and healed them with the light. .

A few weeks ago a young lady came to me complaining of soreness and stiffness of the muscles of her jaw on one side, of a few weeks' duration. Three daily applications of the light entirely relieved her.

Last summer I placed an orthodontia apparatus on a girl's teeth and the next day she presented the worst case of pericementitis I ever want to see. She begged me to remove it at once. Three light treatments that day relieved her and I used it daily until the tissues became accustomed to the pressure and I had no further trouble with her. I know that if I had not used the light I would have had to drop the case.

Whenever a patient complains of a headache while in the chair I relieve them with the light.

Last winter I was troubled very much with cold feet and legs as far up as my knees, caused by poor circulation. One day I had to dismiss a few patients because I couldn't stand any longer at the chair, and while I was walking up and down the floor the thought occurred to me that the light would warm them up and restore circulation, so I tried it and sure enough, two treatments warmed them up for good.

Here is a case I would like to know how you would relieve so quickly if at all. A dentist down the street injected cocain and extracted two roots from an otherwise edentulous jaw. Next day the patient returned with a sore jaw. The dentist injected dioxygen and put in a cotton plug and left it. Of course, it grew worse. The man went to a physician, who gave him morphine and a dilute glyco-thymoline wash. It grew worse and the morphine didn't help matters. The physician sent him to me a week from the start of the trouble. The man told me he hadn't slept for a week, and the day before he became so crazed with pain he smashed part of the furniture in the house. Fifteen minutes after he arrived in my office he was entirely free from pain and the light did it. A large area of his jaw was honeycombed and full of pus. I curretted it, washed it and used the light to cure it. I considered it a fit case for the surgeon's knife, but avoided it.

Here is another interesting case which came to me a few weeks ago. A young man arrived from the country with a complete fracture of the lower jaw at the angle through the alveoli of the third molar, the tooth being retained in the ramus half, the first and second molars being previously missing. He said he had been done up by five others three days previous. He supposed the molar should be extracted because it was loose, not realizing that it was his jaw-fragment that was loose. His whole face and neck was battered and swollen and black and blue. I used the light on him three times within two hours, this relieving the pain and soreness almost entirely, enabling me to handle the jaw without pain. I then reduced the fracture, secured the parts, gave him another light bath and let him go. He said the light made the jaw feel good. He returned two days later in a perfectly normal condition. The swelling, discoloration and pain having entirely disappeared. The only reason for that quick resolution that I can give is the use of the light.

In the line of neuralgia the most important case I had was in the supra-orbital nerves. The attacks came on every day and lasted from three to six hours. A five-minute exposure completely stopped the pain every time. A month's daily treatment cured the case.

Whenever it is necessary to use drugs the auxiliary application of the light will hasten its action.

"The light and heat rays cause pronounced dilatation of superficial blood vessels, relieving congestion, stimulating circulation, and promoting absorption."

"The pronounced counterirritant effect, coupled with dilatation of superficial vessels and relief of congestion of the parts produce analgesic action which is gratifying.

The light is made up in 300, 400 and 500 candlepower intensities, all having the same effect, the higher ones giving a quicker and more penetrating effect.

THE IMAGINATION AS A FACTOR IN THE SALE OF PROFESSIONAL SERVICES.*

E. J. PERRY, D. D. S., CHICAGO, ILL.

It is not my intention to cover facts with rhetorical decoration of any sort. I am speaking for my profession. At the same time I am speaking out of the depths of my own consciousness. I say to you that the dentist or other professional man who depends upon the imagination as a factor of any considerable potency in the sale of his services is fundamentally wrong. The science of business, let me say, should be a study in the sale of his services. Upon what is true business science based? Answer. In the final analysis, business science rests upon an honest consideration of the consequence to both seller and buyer. The salesman that does not take into account the buyer's interest, but instead depends upon his personality and has solely his own immediate aggrandizement in mind not only injures or destroys his own business, but he injures or destroys himself. At a meeting of the National Association of Dental Salesmen in July, 1907, Mr. Frank Hancock of this city, speaking for the dental salesman, made the following statement: "The problem that the dental salesman faces is the making of more money in less time, with a greater degree of satisfaction to the customer. The problem which the dentist faces is the making of more money in less time, with a greater degree of satisfaction to his patient." This statement is at once profound and fundamental. Speaking to the question, how can the dentist make more money and at the same time give greater satisfaction to his patients? Shall the dentist advertise? Can he get larger fees, and will either of these give greater satisfaction to his patients? Briefly answered, no. Neither of these will both enrich the dentist and better serve the patient. The dentist can get larger fees and thus make more money by deserving larger fees, and if he deserves larger fees, he will benefit his patients proportionately. Touching the question, can the dentist advertise with profit to both himself and patient? It will be seen at once that he cannot. If the professional man shall advertise his business, he will as surely ruin himself and bring discredit on his profession, for the following reasons: He can only advertise one of two things, either that he can do things in a way unknown to others or unknown to science, or that he will do it for nothing, or cheaper than other dentists. In the first instance he lies. An unmixed, unadulterated tissue of falsehoods, and the newspaper which carries his advertisement is certainly a party to the lie. In the second instance, if he does the work cheaper, he destroys his profession, and the public loses confidence in the professional skill of the dentist. The professional man who bases success on either of the foregoing ideas fails, and deserves to fail. No man can base success upon such an hypothesis. Whether he defines success as making money or as benefiting the public, from a business point of view or from a professional standpoint, the dentist cannot achieve anything but loss to himself and his profession by advertising. Quackery has many forms, but this one of advertising under the banner of business is the most destructive. The second proposition, can he get larger fees? He may for a time get larger fees without deserving them by using the arts of the confidence man. If a man shall dress peculiarly or unlike other men for the purpose of impressing his patients, he to that extent is a pretender. If a man shall seek to mystify his patients, if he shall affect the eccentricities of genius or use the imagination, if he in any way seeks to impress his patients by magnetic or mesmeric influences, to that extent he is a quack, no matter who he is or what his professional accomplishments are. The man of science is a modest man. The man of skill has no time to impress any one. Then, the only way to make more money and at the same time be of greater service to your patients is to elevate the standard of your service to your patients and thus deserve larger fees. Thus you help everyone by enlarging his view of the professional skill of the dentist. Whatever elevates the standard of your profession benefits the world, and as it benefits the world it also benefits you. If a man has a high and noble purpose in the practice of his profession, it reacts upon his patients and they will prefer him. The patient has nothing to go by but the character of the dentist. The public has learned how to judge you and you must make good by the things you do and what you really are. Getting fees or selling professional services is an ethical problem and an exact science. Practice building is as much of a science as practice itself. Practice building is also character building. If a man cannot conduct his business in a way that will build up and elevate his own character he had better change his business. A recent writer says: "All progress, whether in the realm of business, in physical development or in mental or moral or spiritual growth, is based upon law." What is this law? It cannot rest in selfishness, nor in the use of the imagination. A man is not a success because he makes money. This is but one evidence of his success. The most important question before either God or man is, what has he given the world for what it has given him? Has he simply got some other man's share? If he has not rendered to the world that which is justly due the world, he has failed of success in the most important particular. The dentist who succeeds in collecting large fees and who at the same time does not render a service proportionately beneficial must use some of the forms of quackery. He must use a personality or an art of some sort in the place of skill and science. An artificial denture may truly be worth $500, but to be worth this sum it must represent a high creative art and skill. If a dentist shall charge such a fee and receive it and the denture does not represent this high creative art, then the dentist to do such a thing must use the arts of quackery in some of its many forms. He must be skillful in the use of the imagination in the sale of his services. Give the professional man leeway to use the arts of imagery and imagination and you open the floodgates to all kinds of imagination up to absolute mystification of the patient. I say, the sale of professional services is a science; an exact science; an applied science. Lost confidence on the part of the public and a lowering of the standard of professional skill is the reflection seen in the mirror of success where success is only the getting of money. The sum total of this great loss to the world is the price of this man's financial success.

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*Read before the Chicago-Odontographic Society, April 21, 1908.

This man steals from the artistic and skillful dentist, for the reason that the skillful dentist had lifted the standard to such a high level that good fees were possible, while perhaps for the lack of business science and a knowledge of the law upon which it rests he himself has failed to receive a large fee. The man of science, the skillful dentist or the man who bends the knee at the shrine of professionalism is always within the limits of ethical conduct who shall maintain an elegant and well appointed office. If he shall surround himself with artistic and useful things, he but reflects his own artistic tastes. If he has musical or literary accomplishments, if he has a warm social nature, if he has a trained mind and a true and charming personality, he has a perfect ethical right to any commercial values these may bring him. These are true values and justly belong to the professional man who may possess them. If they impress the patient by appealing to the imagination, the professional man is entitled to the benefit. If they are a factor in the sale of professional services, it is absolutely ethical. It is only the man who affects these for the one purpose of impressing his patients or to create the idea that he is superior to other dentists, that the indictment of quackery is laid against. A quack is a pretender, and the reason he seeks the professional field is because the laity are not judges of his goods until after he has sold them. Therefore, imagination as a factor in the sale of professional services may be used by the dentist without offending the ethical standard of his profession. If a professional man has dignity of character, if he surrounds himself with the refinements of an artistic taste, if he equips himself with all the up-to-date appliances for his work's sake, and the patient sees in the mirror of imagination a skillful and competent dentist, then both dentist and patient are on sound ethical ground. Imagination will not sell professional services a second time to the same person if the goods were spurious. After the services are sold, it is up to the professional man to make good and he must not fail, for nothing else will now take its place. It is up to you to do, and what you do settles your future success. Imagination is a strangely potent force in human character. The experiment of the Oxford College boys is well known. They told a fellow that they would bleed him to death, and he actually died without the loss of blood; so you can scare a man to death. So much of a factor in human character is the imagination that the use of it in the sale of anything beyond a certain point is dangerous and unsafe to both buyer and seller. The only thing to sell anything with is truth. The results are accurate, well known and therefore scientific. Let the professional man study business science, grasp its fundamental principles and stand by the consequences. Let him make more money in less time by deserving larger fees. Thus he will not only give greater satisfaction to his patients, but he will increase the respect of his profession in the eyes of the world.

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

C. E. BENTLEY, D. D. S., CHICAGO.

SCOPE.

The scope of this review of the year's achievement in science and literature is based upon the articles and their discussions, that have appeared in the *Cosmos,* REVIEW, *Digest* and *Items of Interest.* The books referred to, are the reviews in the above named journals, together with such others as have come to my notice. Some 420 articles, covering every phase of dentistry, have been read—some hastily, others carefully—a complete analysis of which would be tiresome and of small profit. I have preferred to group them in classes, and note the effect in suggested tendencies. My function, as I conceive it, is to record the direction of thought as it is mirrored in the literature and give it to you, regardless of any bias I may have. This, at the outset, absolves me from any responsibility; but as the personal equation can never be entirely eliminated from a critical review, it goes without saying that my personal bias will be more or less evident, although, I hope, not obtrusively so.

BOOKS.

From the book reviews in the journals mentioned above a lesser number of text books have appeared this year than in the previous one. Three books, however, have come to my notice, of which reviews have not yet appeared, that make up in quality for what is lacking in quantity. The books referred to are Black's "Operative Dentistry,"

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*Read at the forty-fourth annual meeting of the Illinois State Dental Society, Springfield.

"A Practical Treatise of Techniques and Principles of Dental Orthopedia," by Calvin S. Case, C. S. Case Publishing Co.; "Principles and Practice of Crown and Bridge Work," by H. J. Goslee, D. D. S., Consolidated Dental Manufacturing Co., New York—three Chicago products. This is surely an embarrassment of riches. I want to escape the use of the superlative in this entire review, but if there be a justification for its use at all, it would be in speaking of those books referred to. They are without doubt the most complete word ever written upon their respective subjects. Three classics are these books, designed for student and practitioner alike, that leave small space for further utterance for years to come. No dentist's library will be complete without them. Time and space will not permit further word here, although the temptation to do so is strong.

Other works which have appeared during the past year are: "Atlas and Epitome of Dentistry," by Prof. Gustav Preiswerk of Basle, Switzerland. English edition by George W. Warren, professor of operative dentistry of the Pennsylvania College of Dental Surgery, Philadelphia and London, W. B. Saunders Company; "A System of Dental Surgery," by the late Sir John Tomes, fifth edition revised and enlarged by Charles S. Tomes, M. A., F. R. S., Philadelphia, P. Blakiston's Son & Co.; "Zahnarztliche Metall-Technic," by Dr. Eugene Mueller, Zurich, Switzerland, Carl Ziegenhirt, Leipzig, 1906; "Treatment of Malocclusion of the Teeth," by Edward H. Angle, seventh edition, The S. S. White Dental Mfg. Co., Philadelphia.

PORCELAIN INLAYS.

There has not been as much written upon this subject during the last year as formerly. While considerable interest still lingers about this phase of dentistry, the profession seems to have gotten its "second wind" and is jogging along at a steadier pace. Other stars of the first magnitude have appeared in the dental firmament and many have had their attention diverted, for the nonce, by them.

Dr. J. Q. Byram, who has contributed a series ot articles in *Items of Interest* during the year upon the subject, says in the May *Cosmos,* 1907:

"There are periods in the history of the dental profession when its thought seems to be turned largely to one subject. We have just passed through the porcelain era; we now have another outburst of enthusiasm on inlays, but this time the enthusiasm is for the gold instead of the porcelain inlay. After the gold inlay has run its course we shall be so familiar with the inlay principle of filling teeth that no progressive dentist should plead ignorance of the subject."

Further he states:

"It is probable that those gentlemen who advocate porcelain as a filling material for all cavities and who suggested that gold and amalgam pluggers be discarded. are finding some use for those instruments today."

This statement plainly indicates the status of the porcelain inlay today with the profession. The golden mean seems to have been reached between the radical and conservative, which is that the porcelain inlay has a *fixed* place in dentistry and in certain places governed by known laws, it is the best filling that conserves the demands of art and tooth preservation. The introduction of translucent cement, with its easy technique, together with the wide claims by its manufacturers and adherents, has made serious inroads upon the enthusiasm of the porcelain inlay worker, who had become discouraged and sorely tried by reason of his incomplete knowledge of porcelain, his difficulty of shade matching, and the unreliability of cement anchorage.

EROSION-ABRASION.

This subject, which has given the profession such concern and baffled every attempt to find its cause, has had a more intelligent and scientific investigation and a greater stimulus in the last year than at any time before. Articles published in January, February and March *Cosmos,* 1907, by W. D. Miller on "Experiments and Observations on the Wasting of Tooth Tissue," variously designated as Erosion, Abrasion, Chemical Abrasion, Denudation, etc., are responsible for the new impetus. The investigation covers the entire field of possible theoretical causes, chemical and mechanical. Over 200 experiments in all were made, for twenty-three of which the technique was given which was typical of the remainder.

The experiments were conducted in the laboratory, and with every known acid supposed to have a wasting effect upon enamel and dentin. The experiment with carbonic acid, and its effect upon the lingual aspects of the superior incisors, is startling. In short, one is left to infer that the carbonic acid exhaled from the lungs, being directed over the tongue, which in turn protects the lingual surfaces of the inferior teeth, expends its force and wasting influence upon the lingual surfaces of the superior teeth, and in this way the wasting process ensues.

His experiments with the tooth brush and gritty and even impalpable tooth powders are interesting. Among innumerable citations of the ravages thus created, he actually shows the photograph of a case where the shortening of the teeth and an open bite was produced by the immoderate use of brush and powder.

If, in the span of time, these experiments are verified by other careful investigators, we should pause to think what will be the effect upon the teeth of that class of patients whom our devotees of prophylaxis are now demanding should have their teeth polished every thirty days with such gritty substances as pumice, cuttlefish bone, etc.

His conclusions, in substance, are as follows: Wasting of the teeth is for the most part a purely mechanical process, in which the chief and often only factor concerned is the tooth brush with tooth powder.

Acids in general in the strength in which they occur in the mouth cannot produce wasting. They decalcify the tissue and leave the surface *rough*—in other words, erosion and wasting are not identical. That the *vapors* of powerful acids do attack the organic constituents of the tissue as readily as the inorganic and do produce effects resembling wasting with a minimum amount of friction.

That carbonic acid attacks both dentin and enamel vigorously.

That the wasting of enamel is accelerated by the action of acids and has the opposite effect upon dentin. As he says: "It may be retarded (in the dentin) or prevented altogether."

Again: "There is no specific acid concerned in the production of chemico-abrasion, and acid occurring in the mouth (any which has the power of attacking enamel) may take part in the process."

Again: "Substances that attack the organic constituents of the teeth, such as heat, hydogendioxide, strong alkalis, make the teeth friable and consequently more liable to wear by friction."

The connection between the acid diathesis—in particular, gout and rheumatism—and wasting does not appear to be as intimate as has generally been supposed.

Bacterial enzymes and electrolytic processes are summarily dismissed as potent causes of wasting.

Dr. Joseph Head, in August *Cosmos,* 1907, in discussing these conclusions, admits the accuracy of his grit powder and brush tests in producing abrasions, but sharply differs with him as to the technique of his experiments. Nearly all of the tests made by Miller were in water—not saliva. Head claims: "Saliva not only retards the action of acids, but in many instances absolutely inhibits it." He follows with tests that seem to prove his contention. Thus he says: "The 1,500 watery solution of lactic acid at body temperature will cut and decalcify tooth enamel in 30 minutes, while a tooth can stay in 1,500 lactic acid saliva without roughness or apparent weakening of the tooth structure for fifteen days." Dr. Head champions the theory that acids alone are responsible for erosions, aided by the mastication of ordinary food. He also charges that the test with litmus was unreliable and inadequate.

Miller's investigation will be a stimulus for those who are interested and qualified to pursue it further. It is by far the most exhaustive effort yet produced by any man. The careful and painstaking technique, together with the comprehensive scientific grasp of the man, at once give it the stamp of authority. He has been very generous in his acknowledgments of help and we are proud to record that chief among those thus complimented is our own George Cook of Chicago, to whom he pays considerate compliment.

Another paper upon this subject was "Acid Auto-Intoxication and Systemic Disease the Cause of Erosion and Abrasion," by Eugene S. Talbot, *Cosmos,* December, 1907. Talbot claims that erosion and abrasion are the results of auto-intoxication, that they are the local expression of the constitutional disorder, and that in such patients there is an hyperacidity of the urine.

Dr. J. E. Hinkins, in an article on "Some Investigations on General and Local Erosions of the Teeth," *Items*, March, 1907, accuses Dr. E. C. Kirk of unfairness in accrediting to others what he (Hinkins) claims to have evolved in the chemical analysis of products found in the mouths of persons afflicted with this disease.

Kirk in April *Items*, 1907, replies with equal vigor and a merry war it is.

After wading through 46 pages of this controversy, one is reminded of law of physics, that when an irresistible force comes in contact with an immovable body something happens. And it did. For further information, see articles referred to.

These five articles referred to practically constitute the literature upon the subject of erosion for the year. It may be safely said by reason of these investigations we are nearer to its solution than ever before.

DENTAL EDUCATION OF THE PUBLIC.

The idea that the profession should do its share of educating the public upon some of the common phases of dentistry, now so misunderstood, is endemic.

It needs but a master stroke from a master hand to make it epidemic. The sentiment needs organizing. From every quarter comes the cry for the need of this very thing. Twenty-one articles, during the year, have been written upon the subject. Sporadic attempts have been made in several centers to carry out the idea, among which are notably the following: Lectures on the care of the mouth in Chicago, under the auspices of the Chicago Medical Society. For three years lectures have been given in the public schools in the City of New York on the care of the teeth, under the supervision of the Board of Education. Dental service is given the children of the needy poor at Milton, Pa., and the town pays the expenses. Cleveland, Ohio, paid for the care of the teeth of 1,500 school children last year, the dental service being given free. In Rochester, N. Y., the Dental Society maintains a free dental hospital and conducts a free clinic under the auspices of the Public Health Association. Both at New Orleans and Louisville dental services have been tendered, and refused at Louisville because the school trustees thought the privilege would be abused, and keep business away from other dentists. The Philadelphia Board of Education consented to two or three short talks from a dentist to parents. Dr. Faught, who gave these lectures, sums up his experience in these words: "My opinion of it all is that it is up-hill work, and that the public, both large and small, are at present not much interested in the teeth or their care—at least, in Philadelphia." Dr. Faught should not be discouraged, for we all know they move slowly in Philadelphia. It was once asked of a citizen of that city by a stranger, upon looking at the Schuylkill: "Sir, what river is it that runs through your city?" "Sir, replied the native, "nothing *runs* in Philadelphia—it flows." Among the many articles upon the subject, the one I commend for your consideration is, "Opening the

Doors of Dental Knowledge to the People," by Dr. Richard Grady, *Cosmos*, December, 1907.

A few scattering pamphlets upon the care of the teeth have appeared, but nothing, in my opinion, that denotes a careful digest of the subject and would seriously compel the attention of the reader.

There are several media through which the laity can become informed regarding the care of their mouths—namely: The press, the public schools, the lecture platform, distribution of literature. How can these agencies be judiciously used?

DENTAL EDUCATION.

The perennial subject of dental education, as usual, received its full share of attention during the year. The suggestions have run the gamut from total "Abolition of Dental Schools and State Boards" to "Swan Songs of Degenerate Dental Schools."

Probably the most revolutionary utterance comes from Dr. C. S. Butler, who advocates with much earnestness four propositions for an improved dental condition from an educational standpoint. They are:

First: Abolish all of our present schools and substitute therefore dental departments in recognized universities, with faculties selected by the dental profession.

Second: Abolish all state examining boards (which he considers of questionable utility).

Third: The creation of a National Commission, with plenary powers as to location of schools, curriculum of study and entrance requirements.

Fourth: Reciprocity to practice dentistry among the various states, through a diploma granted by the National Commission.

The discussion of Dr. Butler's paper complimented him upon the ideality of his plan, but showed quite plainly the impracticability of its working. An editorial by Kirk in *Cosmos,* February, 1907, pays his respects to each proposition and clearly shows the untenability of its claims.

Of the twenty-eight papers written upon this subject, all save one evince a desire to advance the efficiency of dental education and increase the efficiency of its product. Some of the arguments are hackneyed, some optimistic, some decidedly pessimistic. A note of surprise comes from Dr. F. B. Noyes of Chicago, in discussing a paper upon this subject read before the Connecticut State Dental Association. While he frankly admits that the dental graduate is better fitted to practice his profession than is the medical graduate, and while he says, "We need more of optimism and less of pessimism," he deplores the tendency in the student that subordinates the purely scientific to the mechanical, and in despair says: "When I come to read the examinations upon my subject, I wish I were dead and buried." Dr. Flanagan also, in the same discussion, indicated his desire for a visit from the undertaker for a similar reason.

It remained for Dr. Talbot of Chicago, in his article "Swan Songs and Degeneration of Dental Colleges," *Cosmos,* March, 1908, to reach the sub-cellar of pessimism. The answer to this paper by E. C. Kirk, in an editorial in the April, 1908, *Cosmos,* is equally interesting.

Talbot makes a sweeping indictment against all dental schools, making no exceptions. Kirk reminds him that he makes no record of the schools studied, but "by inference" makes it appear that he knows all about them.

Talbot justifies the titles given the dentist by the public press, such as "tooth carpenters," "tooth plumbers," tooth pullers," for he says: "Have we not come justly by the title?" "The owner of a piece of property, when out of repair sends for the carpenter, plumber or roofer. The only difference in the case of the dentist being that instead of the artisan going to the property, the property goes to the artisan." Kirk says: "Well, in passing, let us be humbly thankful for this admission that there is some difference, small though it be."

Talbot's dominating motive in the "Swan Song" is *Degeneracy*—in the pianissimo, fortissimo, rallantando, accelerado movements—no soft pedal is used upon this particular note. Kirk says: "Talbot is fond of degeneracy. Indeed, it is difficult to conceive what the results would have been to Dr. Talbot if, under Divine Providence, degeneracy had been omitted from the evolutionary scheme. Certainly there would have been no Talbot."

Talbot says: "Fully 50 per cent of graduates in both medicine and dentistry are failures as practitioners."

Kirk questions the accuracy of the statement and calls it a misrepresentation of the facts. Kirk reminds him that he totally ignores the great amount of scientific work done by dentists and for dentistry. He also stamps Talbot as an unreliable observer and charges him with drawing conclusions from insufficient data; as an example he cites Talbot's famous feat of observation in London several years ago. Further quoting Kirk: "Standing on the corner of Picadilly Circus, Regent street, London," says Talbot, "I casually examined the faces of the passers-by and found that in ten thousand faces 82 per cent had angles beyond the perpendicular." Kirk at this point evidently got out his pencil and pad, for he concludes that if he devoted 3.6 minutes to the observation of each case, he stood for two months working ten hours per day, with no time allowed for luncheon." Or, if five seconds were devoted to each case, he worked ten hours each day for eight and a half days. Kirk significantly inquires if Talbot's data upon degeneracy of dental education was gathered in the above described fashion. Talbot calls all dental schools commercial institutions. Kirk says that you are another, or that *they* are not, which means the same thing, and so on throughout the chapter. These articles make interesting reading, and, would space permit, I would delight to give you a further review. "Swan Song," according to tradition, means last song—death song. Upon the subject of dental colleges and dental education, was this Talbot's Swan Song? These papers of Butler and Talbot show the extremes of thought upon this subject. A saner middle ground is taken by the other writers, and such criticism as is offered is healthy and wholesome. The consensus of thought is that the colleges, together with the examining boards, in the main are not recreant to the trust reposed in them. That dental education, like all other kinds of education, under favorable environments, follows the lines of development and not of degeneracy. That it is the duty of the profession, together with the teachers of dentistry, to see that this environment contains sufficient stimuli to ever keep its tendency upward and not downward.

PROSTHETIC AND OPERATIVE DENTISTRY.

Since the dawn of dentistry to the year 1907, Anno Domini, operative dentistry has been the attractive department of the profession to which the vast majority of its members have gravitated. It has always been the one attractive chair in the curriculum to which students have given the greatest attention. Mechanical dentistry, or to modernize the term—prosthesis—in the college was by the students given a perfunctory nod of recognition, but seldom a hearty handshake. In practice, as rapidly as conditions would permit, it was relegated to the assistant or the laboratory man; the best thought and effort being reserved for the more preferable work upon operative dentistry at the chair.

The disparity between these two departments has been at times a matter of embarrassment on the part of the mechanical men. Mild and at times vigorous protests have been made by them at what they considered their humble placing in the professional estimation. As their importance commenced to be emphasized and a halting recognition given, various attempts at dignity-bolstering were made and we find the words "prosthodontia," "prosthesis," "prosthetist," at first timidly raising their heads and finally boldly demanding recognition, until today the words are firmly engrafted upon our literature. Indeed, judging from the literature of the past year this condition has all changed and in this reversal the name of one man is responsible—that name is Taggart. There it stands like a monolith, against a background of human endeavor replete with failures and transient successes, it points unerringly to the goal of all human endeavor—the ideal.

The possibilities of casting metals in prosthetic dentistry seem unlimited. Ottolengui, in commenting upon this phase of Dr. Taggart's contribution, speaks as follows:

"Items, April, 1908: 'One of our honorary members, Dr. Goslee, last year read a paper before us in which he bewailed the fact that prosthetic dentistry, so-called, had retrograded. As a matter of fact, prosthetic dentistry, as we see it tonight, is driving so-called operative dentistry out of the field altogether. The filling of teeth became partially a prosthetic method when they filled with porcelain. Now that the inlay proposition has been made possible in metals as well as in ceramics, the entire art of filling teeth becomes prosthetic dentistry, because the operative method can be restricted to the preparation of cavities and the cementation of the inlays and all the rest of the work can be done in the laboratory. And it is quite possible that in a short time the operating room will be 4 feet by 4 feet, and the laboratory will occupy the rest of the suite.'"

Dr. Taggart himself in a paper read before the Second District Society of New York, January, 1908, demonstrated by models, etc., what could be done with the method. The whole gamut of mechanical dentistry was shown, from simple inlay to whole metallic dentures. Porcelain bridges upon metal bases, clasps, in short, everything that could be modeled in wax and applied to dentistry, was possible with the process, and that, too, better than any of the old ways. Dr. Goslee, for years an ardent advocate of the baked porcelain crown as against the ready made ones, now frankly admits (in print) in conjunction with the casting process, he is now using only the ready made crown in bridges, etc. And thus, the literature for the year teems with the growing possibilities—mechanical—of this achievement. In fact, it has eclipsed all things else and stands prominently alone. The question naturally arises—is Ottolengui's characterization overdrawn? Has operative dentistry been crowded from its exalted position? Are the chairs of operative and prosthetic dentistry to be merged? Or is the cast inlay all that is claimed for it? Will it pass through the same experience that all similar creations have in the history of our profession? Have we had sufficient experience to say the final word upon cast inlays? These are questions for your consideration.

At this juncture I want to sound a note of warning. A great tidal wave is more than apt to sweep us from our feet and lose thereby the accretion of our wonted application. What I mean is, the fascination of this new method is so alluring that in our endeavor to evoke its possibilities in our own hands we are likely to neglect other things to which we have given serious thought and study. Those who are working in the mechanical way constitute an army. Those who are employed in scientific research are few. We don't want to lose any of that "few" through the attractiveness of this new wave. Particularly is this true of the young recruit. We want his investments of mental capital in a field that has been much neglected and that he be not swerved in his zeal by the readier results that come to the mechanical side. The great field of pathology has been but barely scratched, and rewards equally as great as have come to others await the man who consistently and persistently will pursue them and not be diverted by the current of a great stream.

If we are to escape the charge that ours is a mechanical profession, if we would resent what Talbot says in his paper,—that a university president, in discussing the needs of a dental department with the dean and members of the faculty, said: "Your school is nothing more than a school of mechanics"; I say, if we are to escape these indictments—just or unjust—it is not for your reviewer to here say—we must place a greater emphasis upon scientific endeavor and applaud the louder scientific achievement and not be "held up" by brilliant mechanical results.

PYORRHEA—PROPHYLAXIS.

As to the etiology of pyorrhea, there is not the faintest hope as reflected in literature,of solving this pathologic riddle. During the year not a convincing scientific note has been sounded. Many have twanged the strings upon the harp of speculation, but no harmonious chord has come therefrom. Twenty-nine articles concerning and relating to this disease have been written and some more or less discussed, of which few have any scientific worth, and many are worthy only the scientific scrap-heap. The solution of this problem is coming, but at present it is not violating the speed limit. One of the most novel—novel because of its suggestiveness—comes from the pen of G. S. Junkerman upon "Opsonism Applied to Pyorrhea," Cosmos, June, 1907. He concluded that pyorrhea is a local disease of bacterial origin; as evidence thereof, he states: "When the teeth are gone the disease is gone." Accepting this premise, he proposes to apply the theory of Wright to the peculiar infection of the peridental membrane and curing the disease by increasing the opsonic index of the said membrane, and thereby curing the disease. In the opsonic theory, it is claimed the phagocites devour invading bacteria,—habitual banqueters as it were. This carnival of gluttony on their part is called *phagocytocis.* If there be a sufficient number of the accommodating gentlemen and ladies around, and their families are in good health, germs with ulterior motives on your happiness and health are at once pounced upon, brought before the bar of justice and promptly condemned to the roasting pan, subsequently to be served to an admiring bevy of polite society of bugdom and devoured in true cannibalistic style. This procedure eventuates in what is called immunity. Junkerman would raise the opsonic index of the peridental membrane by the technique advocated by Wright for other infective diseases. In other words, give the patient a serum vaccination for pyorrhea and thus produce immunity. And who can say his suggestion is not fraught with good reason? At least his guess is as good as many others who have written on the subject during the last year.

A great impetus, however, has been given the *treatment* of the disease during the year. I think it no exaggeration to say that more men are effectively treating pyorrhea today than ever before, and that whether we agree with him or not Dr. D. D. Smith, more than any other man, is responsible for this renaissance. The literature is rife with the results of this man's single propaganda and testimony is nowhere wanting as to the good results obtained. Oral prophylaxis and preventive dentistry seem to be the forerunners of an era in dentistry of which many have long dreamed.

ORTHODONTIA.

For the bustle and bristle, to the specialty of orthodontia the palm must be accorded. This is the sauciest youngster—*and withal the most promising we have yet produced.* She jumps from pinafores to flowing trains, decollete gowns and plumed headgear with a single bound. With head erect and with unblurred vision she sweeps majestically through our corridors with a pride born of tremendous confidence that makes the "other fellow" feel like a glass of buttermilk at a gathering of brewers.

There have been more papers written and discussed on this subject than any other one in dentistry during the past year, and there are more to follow.

Dr. Ottolengui, as president of the American Society of Orthodontists, in his annual address, in substance says: "The pilgrim fathers landing upon Plymouth Rock fell upon their knees and thanked God. But what knew they of the vast continent to the west of them, or the savage hordes in their very vicinity?" Continuing: "You have landed upon the Plymouth Rock of your faith. Do you recognize the immensity of the work ahead for this society?" He made no reference to the savage hordes in the vicinity in continuing his comparison. Of the further importance of this specialty he says: "The most important phase of prophylaxis today is the close scrutinizing of dental arches and references to an orthodontist that all mal-occlusions, *however slight,* may be promptly corrected. Again he says: "Two important facts are to be emphasized:

"First: Orthodontists and not dentists should do the work.

"Second: That the dentist, not the orthodontist, should find the work."

Well, now, for virility they show some class. They display symptoms that dangerously approach that very pravalent disease known as "Puffitis." Then, too, they have a journal—*The Orthodontist*—for their especial exploitation. In the language of the Bowery, "That's going some."

We can overlook this proud spirit in our young offspring by reason of what it has accomplished and what it promises. If its promises are realized in proportion to what it has accomplished, it will be but a short time when dentistry will be but a caudal appendage to the profession of orthodontia. For it is no exaggeration to state that a more intimate relationship exists between the orthodontist and rhinologist than in any other departments of dentistry or medicine. This is shown in an excellent paper upon "Nasal Obstruction and Mal-Occlusion of the Teeth," by Dr. B. Frank Gray, *Items,* February, 1907. He claims in many cases that nasal obstruction is the cause of mal-occlusion and that the correction of such will not be permanent unless the obstruction is removed. Hence, all such cases are referred to the rhinologist for preparatory treatment before the mal-occlusion is corrected by the orthodontist. A rhinologist who opened that discussion, sustained that point, and further said: "It is a pleasure to listen to a paper which deals with topics that bring the medical and dental professions closer together." One of the most significant and important ideas prominently brought forward, during the year, by this specialty is the strong emphasis they lay upon commencing early to correct irregularities instead of the orthodox method of waiting until the child is ten or twelve years old, and "if the lower arch is to be moved forward, if in distal occlusion, back if in mesial occlusion, it should be done before the eruption of the first permanent molars."

Stammering is claimed to have been corrected by treatment for mal-occlusion by Dr. L. P. Bethel, Columbus, Ohio.

In the matter of occlusion they have given the profession a fund of scientific data concerning which we had but a desultory knowledge before their investigations. They have shown us the difference between articulation and occlusion of teeth, and given to each term its proper placing, as Dr. Herbert A. Pullen, *Items,* 1908, in his very excellent paper says: "An analytical study of the laws of occlusion, articulation and development today has shifted the abiding place of progress from the mechanic to the diagnostician, from the empiric to the scientist; tomorrow the mechanic and the empiric may again wear its mantle." They have fixed the responsibility of the first permanent molar in the economy of dental evolution and sounded the alarm to members of the profession so that they who run may learn. Finally they have affirmed that the fellow with a saddle-arch is not a degenerate as we have been led to believe by certain criminologists, but that even they can have a show in the game of life, if they but fall in the hands of the orthodontists.

There is a growing tendency on the part of specialists in the profession towards the creation of sects, and a corresponding inclination to withdraw or lose their identity with the profession at large. Thus, societies of Orists and Stomatologists have sprung up in this country and Europe which have no affiliation with dental societies, but rather are seeking recognition from medical organizations and in some instances are identified with them. The latest specialty to follow the tendency of divorce and segregation is that of the orthodontists. From the reading of the papers and discussions of this specialty, whenever this topic is touched upon, the unavoidable conviction is, this opinion is about to take concrete expression. This tendency in its effects is harmful and emphasis should be made by national, state and local societies against it. Any attempt to weaken the profession should be discouraged. The field is large enough to contain all, its development has been so phenomenal that all should be proud of its possibilities and willing to contribute to its glory.

ARTICLES UNCLASSIFIED.

Among the articles I commend for your perusal are:

"The Blood Supply of the Teeth," B. S. Hert, *Digest,* July, 1907.

"Etiology of Dental Caries," Hugh Whitman, *Digest,* October, 1907.

"Transition from the Deciduous to the Permanent Dentition," Chas. R. Turner, *Cosmos,* March, 1908.

"On Preparing Dental Papers," L. C. F. Hugo, *Cosmos,* November, 1907.

"On Pathology of Pericemental Inflammation," Julia Endleman, *Cosmos,* July, 1907.

"The Value of Association," A. H. Peck, *Cosmos,* October, 1907.

"History of Dental Profession," Chas. McManus, *Cosmos,* May, 1907.

"Annual Address of the Illinois State Dental Society," Dr. Elgin MaWhinney, REVIEW, June, 1907.

"Articles on Therapeutics as Applied to Dentistry," J. P. Buckley, REVIEW, August, 1907, and November, 1907.

"The Degeneration of Tissue with Special Reference to the Oral Mucous Membrane," Geo. W. Cook, *Cormos,* October, 1907.

"The Articulation of Full Artificial Dentures," Geo. B. Snow, *Magazine,* 1907.

"On Abnormally Acid Saliva," J. E. Hinkins, REVIEW, April, 1908.

CONCLUSION.

This cursory glance of the year's literature is by no means complete, and many meritorious articles have not been mentioned that perhaps should have had a placing in this critique. This omission implies no lack of merit in such papers, but is simply in reluctant obedience to the inexorable limits of time and space. In closing, it is my pleasure to say that the last year in dental literature has indicated a steady progression toward a higher mechanical and scientific efficiency, and any careful student of that literature must be justly proud of this rapidly developing profession.

Chicago, Illinois, 1908.

REPORT OF COMMITTEE ON ART AND INVENTION.*

BY DR. R. J. HOOD, SPARTA.

In preparing for a report on the above, your committee corresponded with some eighty supply and specialty houses and with individual inventors or manufacturers. The ultimate results of this work are embodied in the report following:

There exists either an indifference upon the part of the manufacturers or a misunderstanding as to the real purpose of the work of this committee, as many of them treated with unconcern the effort to secure their co-operation in a work of a purely mutual nature.

The past year has been prolific in casting devices, and it was not deemed wise nor necessary to report on the innumerable devices which are now offered for this purpose. The fundamental casting idea, the real Taggart process of the disappearing model, is used by all of them.

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*Read before the Illinois State Dental Society, May, 1908.

Dr. Taggart's perfected machine (mentioned by the preceding committee) was placed upon the market, and is a most complete apparatus, being the result of much labor and thought upon the part of its inventor. Every little detail is carefully arranged for, producing the most beautiful and perfect results. Its advent has marked another milestone upon the journey of progressive and scientific dentistry.

The vacuum, centrifugal, steam and moldine pressure devices each have their following, each using, as before stated, the Taggart disappearing model.

The S. S. White Dental Mfg. Co. submit the following new appliances:

1. Doriot hand piece No. 3.

By the use of a union nut a convenient means is provided of removing and replacing the sheath for oiling. Another improvement is the quick method of attaching angle and mallet attachments without having to remove sheath. This hand piece is also fitted with the extension arm stop attachment, which prevents twisting of engine belt.

2. Attachments for Doriot hand piece No. 3.

Right angle "R," contra angle "U," engine mallet No. 4. These attachments slip over the nose of Doriot hand piece No. 3. Thus securely attached, they become in effect a part of the hand piece.

3. Black's Amalgam Pluggers.

A set of (7) amalgam pluggers devised by Dr. G. V. Black along the same lines of instrumentation illustrated by his set of cutting instruments. The contra angle of the shank brings the working surface into line with the axis of the shaft. The larger pair of oval shape pluggers are formed especially for condensing amalgam in the proximal portion of a proximo-occlusal cavity. This form gives it a grasp in this position on a larger proportion of the amalgam, a thing especially desirable in condensing this material. Made only on long handle.

4. Travelers' Tooth Powder Flask.

The particular purpose of this form of flask is to afford those who travel a safe receptacle for their tooth powder, one which will not permit the powder to escape and injure clothing in the same suitcase. The apartment is opened and closed by a milled swivel cap within the screw cover.

5. Rubber Dam Clamps Nos. 138 and 139.

These clamps were designed by Dr. G. V. Black to serve two purposes—first, to permit their being placed on the third molars, also for use on buccal cavities extending below the gingival line in molars. In case of need they can be placed far down on the tooth after the gum has been pushed away and will retain their hold. The clamps are provided with a very strong spring, which enables them to stay fixed in position.

6. Contouring Pliers No. 135.

A form of contouring pliers devised by Dr. J. H. Prothero.

7. Contouring Pliers No. 136.

A form of contouring pliers devised by Dr. Hart J. Goslee.

8. Contouring Pliers No. 137.

A modification of the well-known Reynolds pliers. The beaks are made narrower, with slightly less curvature, and rounded at the tips to prevent marring of the plate. The beaks come together toward the free end, but when closed are slightly separated toward the joint to give increased power to their working parts.

9. Finishing Files and Knives.

The File-cut finishing files were designed by Dr. Black especially for the finishing of gold and amalgam approximal fillings to the normal form of the approximal surface.

The finishing knives are designed for finding and removing any overlaps along the gingival border of approximal fillings.

10. Pichler Finishing Knives.

The two forms of finishing knives with return angle in the working blade enable the back teeth to be reached more effectively. These instruments are all made on octagon file-cut handles.

11. Inlay Wax.

This wax is green in color and put up in stick form for use in Cast Gold Inlay Work. Free from any substance detrimental to the forming of a perfect model for cast inlay and sufficiently hard without being brittle.

12. Carborundum Point No. 20.

This point was designed by Dr. J. W. Wassal of Chicago, and is especially useful for Inlay Work.

S. S. W. New Diamond Chair.

This chair is put forth as a compact embodiment of the best features of several of its predecessors. A chair of very high efficiency at a moderate price.

It is hydraulic, with plunger in two sections. It is firmly supported by a column of oil whose even outflow affords a smooth, easy descent in lowering. Each stroke of the pedal raises the chair uniformly 7/8 inch.

The chair has a range of 20 inches—from 17 to 37. It is nicely balanced, can be inclined backward, rotated as desired, or quickly thrown into the full anesthetic position. The back and head-rest are raised and lowered together and each has an independent adjustment of its own.

The head-rest is a departure in dental chair mechanism. The head-rest pads are hinged to a swinging yoke, and move at right angles to the axis of the yoke, automatically adjusting themselves in any possible position to the patient's head. The head-rest has a horizontal movement toward the operator of three inches from its central position.

S. S. W. Electric Furnace "A."

The points of special superiority in this new furnace are briefly stated:

First. The construction of the muffle. Platinum wires all around the sides, roof, and bottom of the chamber, imbedded deep enough in the fire-clay to avoid accidental short-circuiting but not to interfere with free radiation of heat. Easily placed, no bolts or nuts to adjust; spring connections. Muffles for a given voltage interchangeable.

Second. Thirteen contact points provide for close regulation of heat. Resistance wires imbedded in enamel for protection against climatic variations.

Third. The base is practically indestructible. Made of asbestos lumber, it combines lightness with great strength, will not break if it falls nor crack from overheating.

ELGIN DENTAL SPECIALTY CO.

(1) *Dr. R. C. Brophy's Vacuum Casting Device.*

An air-tight cylinder from which the air is exhausted by pump. Two sizes of tubes project above with base upon which is placed the casting ring. When the metal is melted the valve is opened, the atmospheric pressure forcing the same into the investment cavity.

A very practical and efficient apparatus, with the advantage of nothing interfering above the crucible, the action being from the bottom of the ring.

BREWSTER DENTAL CO.

(1) *The A. P. Johnstone Instrument.*

For making perfect joint with porcelain between a porcelain crown and natural root. Consists of a pair of long pliers, with two opposing cups at end of pliers.

The crown is invested in one of these cups, the post with model of root in the other. A button of low fusing porcelain is now placed between and heated, and as it fuses the pliers are closed.

By using this instrument a perfect joint can be made.

LUKENS AND WHITINGTON.

(1) *Dr. Woodward's Cervical Rubber Dam Clamp.*

For use in those cases where labial jaw must be adjusted much higher than the lingual. So constructed as to admit of this adjustment. Opened and closed by a thumb screw.

(2) *Dr. Norman L. Jameson's Centrifugal Casting Machine.*

To be mounted on mandrel and used on electric lathe. Has counterbalancing weight with investment ring holder. The ordinary centrifugal method, the lathe furnishing the motive power.

A. C. CLARK & CO.

(1) *Clark Drying Oven.*

A substantial laboratory convenience, for drying investments, especially for cast work. An evenly distributed heat from a bunsen burner.

(2) *Nyman's Deflect Saliva Ejector and Tongue Depressor.*

Made in right and left for attachment to the ordinary saliva ejector tube.

Intended to be held in position by the patient, and so shaped as to hold the tongue away, while removing the saliva.

A very useful and well made appliance.

TRAUN RUBBER CO.

(1) *Gold Dust Rubber.*

Pure Para rubber with the amount of sulphur, to which has been added finely pulverized aluminum. Especially valuable in thick plates, the aluminum distributing the heat evenly—obviating porosity.

Lighter than ordinary rubber, takees a high polish, and when vulcanized the aluminum has the appearance of gold dust—hence its name.

(2) *Perfumed Rubber Dam.*

A pleasing odor permanently incorporated in the dam, overcoming the rubber odor. A pleasing article.

CONSOLIDATED DENTAL MNFG. CO.

(1) *New Consolidated Vulcanizer.*

Has a swinging arm, to which is suspended the lid. This lid is pressure equalizing, great pressure being brought upon it by means of a compound worm and cam, thus doing away with all wrenches, screws, etc.

Pot of heavy seamless burnished copper, amply large for the largest flasks or flask press. Using gas, kerosene or alcohol.

(2) *Dr. H. J. Goslee's, latest edition, Crown and Bridge Work.*

BUFFALO DENTAL MANUFACTURING CO.

(1) *Trigger's Cavity Impression Trays.*

A set of five cone socket instruments of varying sizes and angles, for carrying modeling compound, cement or other impression material into cavities to secure impression for model for inlays or crown or bridge work. Have flat face with turned under-cut edge, with several small holes through the tray, to aid in holding impression material to the tray.

(2) *The Lewis Pyorrhea Syringe..*

A metal syringe with finger rings for handling. Fitted with straight and curved gold needles. Can be filled and operated with one hand.

(3) *Case Abrasive Disk.*

A thin flexible steel disk upon which the abrasive material has been electrically deposited. Can be sterilized without injury.

For cutting tooth structure, fillings or inlays. Made in three sizes and several grits.

(4) *Buffalo Special Plaster Spatula.*

Has a long handle with a short, broad blade and rounded end. Adapted for thoroughly mixing and stirring plaster.

(5) *Mylocal.*

An antiseptic liquid which becomes a local anesthetic upon adding the cocaine contents of the small vial which accompanies the liquid.

(6) *Reversible Flask.*

Made with a loose lid and cover, with rings of different depth, all parts being interchangeable. Can be used either as deep or shallow flask. Bolts are steel with brass nuts.

(7) *Glass Alcohol Lamp.*

Of generous capacity, with broad base to prevent tipping.

DR. F. E. ROACH.

(1) *Improved Root Facer.*

A facer having a movable guide pin, thus allowing one instrument to trim an oval or oblong shaped root, without wounding the gum tissue.

A very practical and much needed improvement.

JOHN T. NOLDE DENTAL MFG. CO.

(1) *Carroll's Dental Clamp and Matrix.*

A simple and effective clamp, for holding a thin matrix strip in place, to assist in inserting gold or plastic fillings.

(2) *Carroll's Retainers for Artificial Teeth.*

Two aluminum arms, to be attached to lower plate, projecting up from plate, allowing muscles of cheek to grasp them, holding the lower plate to position on the ridge.

(3) *Fahey's Ideal Crown Holder.*

An instrument for holding gold crowns while polishing. A holder having three projecting points (one being removable) which are inserted in crown, being held on tension by spring.

A finger trigger contracts the rods, releasing crown.

(4) *Dental Formulary by Dr. Herman Prinz.*

(5) *Lectures on General Anesthetics in Dentistry by Dr. Wm. H. De Ford.*

J. W. IVORY.

(1) *Lee Casting Outfit.*

A neat, substantial base upon which is placed the casting ring. A hand lever attached to base, carrying a recessed cup for mouldinc is brought to place upon the molten metal, forcing it into investment cavity. A convenient nickeled sprue holder and crucible former accompanies the outfit. Also a handy casting-ring tong.

(2) *Elliot's Adjustable Soldering Plier.*

Two small plier points, controlled by a thumb screw, are carried by a series of arms having ball and socket joints, admitting of any angle of adjustment. All mounted upon a substantial cast base.

A very convenient soldering appliance.

(3) *Rubber Dam Clamps.*

Three new and improved models of the popular Ivory clamps.

DENTIST SUPPLY CO.

(1) *Twentieth Century Mold Book and Milliameter Measure.*

These are to assist in selecting proper teeth for dentures. Indicating marks are made upon the wax bite. The various distances are measured by the flexible milliameter measure, and by reference to tables, the mold best adapted to the case is easily and quickly selected.

The method is also used for selecting by number, facings and porcelain crowns.

A very simple and commendable method.

JOHNSON & JOHNSON.

(1) *Aseptic Rubber Dam Holder.*

Consists of tape and two face pads of cottonoid and a pair of wire retainers over which the dam is stretched.

The tape and pads are to be used but once and destroyed, the wire retainers being used repeatedly. A much needed and meritorious product.

(2) *New Era Waxed Dental Floss.*

Put up in aseptic manner in glass container with cutting device, 150 yards on a spool.

Also on 12-yard spools in small containers, for use by the patient.

(3) *Dental Waste Receiver.*

Has weighted base with clips for holding a cardboard carton, having a self-closing opening in the top.

After using, the carton and contents are burned. Extra cartons are supplied for use with the base.

LEE S. SMITH & SON CO.

(1) *"Jiffy" Tubes No. 2.*

Especially designed for use in filling root canals, being used with the "Pneumatic Blower." This blower consists of an atomizer bulb with tubing and discharging tube. The "Jiffy" tube, containing root canal filling material, is passed over the point, and after inserting into the canal the bulb is pumped, forcing by air pressure the material into the canal.

(2) *"Jiffy" Tubes No. 3.*

A sealed tube filled with an antiseptic chloro-percha solution. When wanted for use, the small end of tube is cut. Can be resealed with wax.

(3) *Triplex Pliers.*

A well-made plier having three sets of contouring jaws, taking the place of three pliers. This device is handy, efficient and a time saver.

(4) *The Lyon Plate Swager.*

Consists of a casting block upon which is run the fusible metal model made directly from the impression.

By means of screw power the ring and follower, containing the plastic swaging material are forced down and around the casting ring with its model, swaging the metal plate to place upon the model.

(5) *Improved Spooner Syringe.*

The rubber bulb has a projecting neck which fits into a glass point, is easily and quickly removed for rapid filling or for change of point.

Can be used for air, water or as aspirator.

(6) *Booth Aseptic Table Top.*

A removable plate of white porcelain enameled sheet steel, with curved rim. Made to fit all sizes of the leading makes of bracket tables. A simple adapter is used on odd sized tables.

A simple and very convenient aid toward aseptic dental practice.

(7) *Rubber Chair Mat.*

An elastic rubber mat, 5 feet in diameter, to be placed under the operating chair.

A pleasing and restful floor surface to the busy practitioner.

O'BRIEN-WORTHEN CO.

(1) *Flannigan's Centrifugal Casting Machine.*

An upright standard with revolving arm, an ordinary clock spring furnishing the power. Used with the bucket or flask holder and melting tray, giving beautiful results.

(2) *Boone's Mesial and Distal Trimmers.*

Made in set of four, giving two sizes of each instrument. Neck of instrument so shaped as to give direct access of cutting edge to the buccal and lingual walls, the cutting angle of one pair for the mesial walls and of the other for the distal walls.

(3) *Root Canal Plugger.*

A convenient instrument for introducing the root canal point into the canals, especially in distal cavities in molars, the angle being such as to give convenient access to the cavity.

REPORT OF LEGISLATIVE COMMITTEE.*

Your legislative committee begs to report that during the year since our last meeting, they have given some time to the sounding of sentiment among the dental profession generally, and particularly that of Illinois, and that they feel assured that there is a strong desire that provisions should be made at the earliest possible date that will secure a dentist once approved upon examination by the Board of Dental Examiners of one state, the right—or courtesy, at least—of entering practice in another state without being subjected to a further professional examination.

Had your committee known that the legislature of Illinois would not adjourn last May, as has been their custom heretofore, they would have endeavored to secure an amendment to the dental act having this matter in view, during the past year.

Last December your committee addressed a letter to the secretary of the State Board of Dental Examiners, in which they asked if, under the present act, the board would feel authorized to enter into reciprocal arrangements with the boards of other states for a mutual recognition of licenses, provided the conditions upon which they were granted were substantially identical; or if it would be necessary, before this board could exercise such power or enter into such an arrangement with any other dental board, that additional legislation should be secured.

Since our meeting last year the state of Michigan enacted a law which authorizes the Michigan State Board of Dental Examiners to enter into such arrangements. The state of Ohio recently enacted a new dental law which contains a number of very wise provisions, and in Section 12 the power to establish reciprocal relations is specifically given to the State Board of Dental Examiners of Ohio. This section reads as follows:

> Section 12. The state dental board may issue a license without examination to an applicant who furnishes satisfactory proof that he is a graduate from a reputable dental college of a state, territory or district of the United

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*Read before the Illinois State Dental Society, Springfield, May 12, 1908.

States, and holds a license from a similar dental board, under requirements equal to those of this state, or who, for five consecutive years next prior to filing this application, has been in the legal and reputable practice of dentistry in a state, territory or district of the United States and holds a license from a similar dental board thereof, if in either case the laws of such state, territory or district accord equal rights to a dentist of Ohio holding a license from the state dental board, who removes to, resides and desires to practice his profession in, such state, territory or district. No license shall be issued under this section unless authorized by an affirmative vote of all the members of the board present at such meeting.

This Ohio law was also submitted by your committee to the Secretary of the State Board of Dental Examiners, with a request that they obtain through their attorney an opinion of the desirability of such a section as an amendment to our law, and whether the section as passed in Ohio would be compatible with our law. Your committee has received through the Secretary of the Illinois State Board of Dental Examiners the opinion given by the attorney of the board in answer to both of these questions, as follows:

Dr. J. G. Reid,
Secretary Illinois State Board of Dental Examiners,
Chicago, Illinois.

Dear Sir: I am in receipt of your request for my opinion in reference to questions submitted by Drs. Charles E. Koch and others, constituting the legislative committee of the Illinois State Dental Society, in their letter dated December 20, 1907, which may be substantially stated as follows:

"Can the Illinois State Board of Dental Examiners, under the law as it now exists, enter into reciprocal agreements with other States in the Union having similar requirements to those of Illinois with a view of recognizing licenses issued to practitioners in those States without the necessity of the applicants undergoing the examinations as now given by your Board?"

The query presented places me in considerable doubt as to just how far your Board can go in these matters. The Statute, as it now exists, unquestionably makes it obligatory that all applicants, whatever their qualifications, must take the Board's examination. It is true that the Board have the power to determine just how and in what manner these examinations shall be given and what they shall consist of. An examination, as contemplated by law, is one of such a nature as to determine the fitness of the applicant to engage in the subject matter upon which he is being examined, and I am inclined to believe that your Board would have the right to classify applicants and give them such an examination as would convince your Board of their qualifications, which could be either a perfunctory examination or a thorough examination if no favor was shown by the Board in its classifications. In other words, a thorough and exacting examination could be given to applicants who presented themselves for examination with the qualifications now prescribed by law, and a separate examination could be given to applicants with the qualifications as suggested by Dr. Koch's letter.

Your Board can readily see, however, that each one of these classes of examinations would necessarily have to be uniform in its applications. In other words, it would have to apply to all applicants presenting the diploma of a reputable school and a license from any State in the Union, which would, as I understand the Doctor's query, be just what he is trying to avoid. Your Board has no authority, under the law as it now stands, to give any examinations except those which are uniform and uniformity of examinations means not only uniformity in the manner of the examination, but uniformity in the qualifications of the applicants, and any reciprocal agreement with any individual State in the Union would be entirely outside of your Board's power.

I have examined the Ohio act, and particularly section 12 of the act, which provides for this manner of issuing licenses, and I would suggest to the Illinois State Dental Society that they secure, if possible, an amendment to the present State law substantially as that provision in the Ohio law, which I believe is in form and substance good law. The Ohio act has many other good points and I am of the opinion it, in no manner, conflicts with the late decisions, both in our State and other States, in relation to dental acts.

Very respectfully,

V. A. Wright.

Your committee therefore earnestly recommends to this Society that it authorize the securing of an amendment to our dental law substantially the same as this Section 12 of the Ohio law.

The Ohio law also has some features which are not included in our law, and your committee desires instructions with reference to the desirability of amending our law to make similar provisions as contained in these sections. Sections 21, 22 and 23 of this law are as follows:

Section 21. Whoever sells or offers to sell, a diploma conferring a dental degree, or a license granted pursuant to the laws of this state; or who procures such diploma or license with intent that it shall be used as evidence of the right to practice dentistry by a person other than the one upon whom such diploma was conferred, or to whom such license was granted; or who with fraudulent intent alters such diploma or license, or uses or attempts to use the same when altered, shall be fined not less than one hundred dollars nor more than two hundred dollars, or be imprisoned not less than thirty days nor more than sixty days, or both. A subsequent conviction shall be punished by the maximum penalties prescribed in this section.

Section 22. Whoever, being a manager, proprietor, operator or conductor of a place for performing dental operations, employs a person who is not a licensed dentist to do dental operations as defined in section 18 of this act, or permits such person to so practice dentistry in his office; or whoever practices dentistry under a false name, or assumes a title, or appends or prefixes to his name, letters which falsely represent him as having a degree from a legal dental college; or who impersonates another at an examination held by the state dental board; or who knowingly makes a false application or a false representation in connection with such examination, shall be fined not less than one hundred dollars, nor more than two hundred dollars, or be imprisoned not less than thirty days nor more than sixty days, or both. A subsequent conviction shall be punished by the maximum penalties prescribed in this section.

Section 23. Whoever violates a provision of this act, for the violation of which no penalty has been prescribed, shall be fined not less than fifty dollars nor more than one hundred dollars, or be imprisoned not less than ten days nor more than thirty days, or both. A subsequent conviction shall be punished by the maximum penalties prescribed in this act.

DENTISTS AS JURORS.

Your committee has consulted attorneys with reference to a provision for the exemption of dentists from the performance of jury duty, and have been advised that it would be dangerous to attempt to amend the general statute covering jury service and the exemptions therefrom, but that it would be entirely proper to introduce such an amendment to the dental act. Physicians are exempt from jury duty by the general statute. Whether the courts of Illinois would hold that a dentist, being a dental physician, is exempt under the statute already existing is a question that has not been decided in this state. In North Carolina during the War of the Rebellion the Supreme Court of the state decided that dentists were exempt from conscription under the provision exempting physicians.

If the dental profession desires to have their exemption from jury duty secured in this state it will become necessary either to secure an amendment to the dental act, or for some dentist who is drawn on a jury, to make the contention that he is entitled to exemption under the general statute, as a physician. If such a case is undertaken it would be necessary to provide the funds for litigation, as it cannot be expected that any one individual would make the sacrifice to carry on such a contention to a final decision in the courts, at his own expense.

Your committee further desires to report in this connection that the Cook County Jury Commission for a number of years past has taken the view that dentists occupy towards the people similar relations that the physician or surgeon does, and have not drawn them as jurors, and your committee therefore would ask specific instructions with reference to this particular matter.

DENTISTS IN STATE CHARITABLE INSTITUTIONS.

Since the last meeting of our Society some of the state institutions, under arrangements with the State Board of Charities and the Civil Service Commission, have had dental surgeons appointed after a competitive examination, conducted by the Civil Service Commission, which was held in order to determine the relative ability and capacity of the several candidates. These appointments carry with them compensation which is ridiculously small, but it has been explained to your committee that this financial arrangement is so small because the entire question is in the experimental stage. Your committee feels that the gentlemen who have entered upon this field as pioneers and have accepted these positions with the small pecuniary remuneration are entitled to a great deal of credit on the part of the profession.

It appears to your committee that if dental hygiene and dental operative skill is of sufficient value to be made part of our institutional care, it should receive a standing in compensation upon a par with other professional services. In this respect we are glad to report that the Civil Service Commission is entirely in accord with our views.

In Ohio a law is now before the legislature relating to the establishing of dental services in the State Charitable Institutions, and your committee would urge upon this society that steps be taken during the session of the next legislature that a law be passed which would make provision for dental internes in the service of the State Charitable Institutions, and to establish the same on a financial basis that would assure the very best service.

The greatest encouragement for service of this kind, your committee has been informed, has been rendered in the Illinois Eastern Hospital for the Insane at Kankakee, and at the institution at Bartonville. If this service is to be of greatest value to the people it would seem that it should be specially given to the institutions where children are the inmates, such as the St. Charles Hospital for Boys, the Geneva Home for Girls, the Soldiers' Orphans' Home at Normal and others.

FROM REPORT OF DR. W. J. WEATHERWAX.

Number of patients treated	931
Teeth and roots beyond repairs extracted	2,753
Tartar removed and teeth cleaned; number of patients	412
Pyorrhea treated; number of patients	10
Abscesses lanced; number of patients	5
Pulps removed and roots filled; teeth	3
Amalgam filling; teeth	22
Cements; teeth	67

My limited experience with the mouths of the insane has been to find them in the worst possible condition; mouths that have had no care for years; badly decayed teeth and roots, covered with deposits; gums inflamed and diseased. The plan I would suggest would be to extract all these roots and badly diseased teeth; scale off the tartar of the remaining teeth and keep them in as healthy condition as possible. I believe the patients will be in better health with these teeth out, as the food will reach the stomach in a pure condition and not mixed with the bacteria that comes from around teeth in such bad condition. The breath from some of these cases was so bad that it was almost impossible to stand near them long enough to extract the teeth.

Respectfully submitted,

Charles R. E. Koch,
R. N. Lawrance,
J. W. Ritter,

THE ROMANCE OF DENTISTRY.*

BY DR. M. R. HARNED, OF ROCKFORD.

To go into the romance of earliest dentistry, when the itinerant dentist went from house to house and removed offending members, or pounded out appliances to retain loosened ones, or stuffed holes in teeth, carrying the news of the community, the choice bits of gossip, or the latest song, might indeed be interesting, or under a master hand at least entertaining. But it is not the purpose of the author to deal with this phase of the romance. For the romance which appeals to men of this age is the romance of action. And so I would introduce the men and the ideas which have been influential in the formation of the dental profession as it is today.

That dentistry is not strictly modern is shown by the fact that ancient Egyptian records indicate that dentistry was considered a distinct branch of surgery. That among the writings of the Greeks, Hippocrates and Herodotus (about 400 B. C.) dental subjects were casually treated. While the historic records of the Romans by Pliny, Martial, Horace and Celsus contain dental items, and Galen devoted some space to the subject (150 B. C.).

But the dark ages came on and interrupted the making of records; surgery in all its forms fell under the ban of superstition; magic only was allowed to heal; libations were poured, sacrifices made, incantations sung, and we surmise the abscess broke, the gods were appeased.

However, during the first fourteen hundred years of the Christian era various authors incorporated dental items in their records; such were Etius, Phaxes, Albucasis and Eustachius.

Probably the first book published upon the subject was written anonymously by a German (1530), a copy of which is now the property of Dr. Black (to whom I am greatly indebted for much else beside the following information which is contained in Dr. Black's new work not yet from the press). This author refers to one Mesu (who wrote about two hundred years before, but no records remain) as an authority upon dental subjects.

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*Read before the Illinois State Dental Society, May, 1908.

Two items in this book are of particular interest; one is the first mention of the use of gold leaf, for filling teeth; the other is with regard to causes of decay.

Translation: "Caries is a disease and evil of the teeth in which they become full of holes and hollow, which most often affects the back teeth, especially so when they are not cleaned of clinging particles of food, which decompose, producing an acid moisture (literally a sharp moisture) which eats them away and destroys them so that finally, with much pain, they rot away little by little."

This author was the first to approach the theory of caries as we now know it. In fact, he was nearly three centuries ahead of his time in this respect.

In 1579, Pakie (French) wrote a treatise upon the teeth. Fouchard wrote in 1731, but neither of them approached this phase of the subject as did the German. In 1778, John Hunter (English) called caries "mortification" and Fox (1806) and Bell (1825) called it "gangrene."

Dental practice was introduced into the United States in 1778 by Lemaire, a Frenchman who came to this country to join the revolutionary forces.

So much for a brief outline of ancient dental history.

The real romance of dentistry, however, did not begin until the nineteenth centruy. Men had worked hard and devoted their lives to their patients, but they had not co-operated to help each other. In the early thirties of the nineteenth century they began to see the value of association. This was probably due to the example of the medical profession, and so they conceived the idea of being grafted onto that profession, as a branch of the healing art. Overtures were made, looking to adding chairs to the medical curriculum for the teaching of dentistry. These suggestions were set aside as being unworthy consideration, because dentistry was "simply a mechanical art."

This rebuff seemed to furnish the incentive necessary to such men as Chapin A. Harris, Horace H. Hayden, Thomas. E. Bond, H. Willis Baxley and others, to bring dentistry out as a distinct branch of the healing art. They determined to make it worthy the title of a profession, and they have left us an inheritance of which we are not only proud, but an ideal which ye love to honor, and a responsibility which we are determined to fulfil.

They accordingly got together, and declaring that "the degree of M. D. does not indicate a qualification to practice dentistry," they applied to the state of Maryland for the first charter for a dental college, under the name of the Baltimore College of Dental Surgery. This was granted, and the college established in 1840. About the same time (1839), was organized the first dental society, in New York City, called "The American Society of Dental Surgeons." And in 1844, the Mississippi Valley Dental Association was formed at Cincinnati. These organizations were followed by others, and many of them. They sprang up all over the country, and with them, magazines to publish their proceedings and promulgate their ideals. Among these early publications were the Dental Register of the West and the News Letter at the East.

The tremendous impetus given to the new profession by such a combination of educational forces can well be imagined. Men are always ready to help, when an emergency comes, and so the volunteers were many and enthusiastic, and the true professional spirit was shown by the willingness of each and every one to contribute his mite to the general welfare. And with these facilities for spreading ideas, the profession is like a great phalanx marching elbow to elbow. The touch of a button in New York, Chicago or San Francisco is known throughout the line, and the common sentiment is "We rejoice in our opportunities" and "Push on to fulfillment."

Our progress has been a series of wave motions and in the truly romantic fashion, every seventh wave is the great one.

What the first ones of the century were is hard to trace because of lack of records, but the first one of great significance recorded, which seemed almost like a tidal wave, was "Mineral Paste," introduced into this country about 1830 by two Frenchmen, Crawcour, under the name of the "Royal Mineral Succedaneum." It consisted of a combination of silver and copper, rendered temporarily plastic by mercury. As soon as it was known that mercury was used, the fight was on, and it has been kept up ever since. In 1841, the American Society of Dental Surgeons appointed a committee to report on filling materials containing mercury. The committee reported "that the use of all such materials was injurious, both to teeth and mouths, and that there was no tooth which could be *serviceably* filled that could not be filled with gold."

Cases of ptyalism were invariably charged to such fillings if any were present. Charges were made and refuted, until 1845, when the Society appointed another committee of investigation. The members of this committee were to call upon each and every member of the society and ascertain each man's views. After doing so, and discussing the subject freely, the committee made their report and concluded with the following sentence: "That any member of this Society who shall hereafter refuse to sign a certificate pledging himself not to use any amalgam, and, moreover, protesting against its use, under any circumstances, in dental practice, shall be expelled from this Society." In 1847, eleven members were expelled for using amalgam and refusing to sign the required pledge. The Society struggled on, much hampered, and in 1856, "gave up the ghost." A peculiar fact in this connection was that Dr. Elisha Townsend, the author of the formula for Townsend's amalgam, was president of the society and issued the call which resulted in the meeting of dissolution.

In 1867, the St. Louis Odontological Society passed the following resolutions:

Resolved, first, That the filling of teeth with amalgam is injurious and detrimental to health.

Resolved, second, That as a society we discountenance the use of amalgam in dental surgery and will not use it.

Resolved, third, That we are always prepared to defend the principles herein laid down and invite discussion thereon.

The war went gaily on. Dr. Townsend retracted all he had said and done for amalgam, and denounced it as unfit for filling teeth. This combination seemed like the death knell to amalgam. You have heard it said that Grant was a failure at thirty-nine and one of the world's greatest generals at forty-one. The emergency showed the man's mettle. So when Dr. Townsend went back on amalgam, it made J. Foster Flagg. For as he says, "As it was entirely owing to Professor Townsend's faith in the tooth saving quality of amalgam that I had been induced to commence experimenting with it—it was with peculiarly painful professional feelings that I viewed this retrograde step—as I thought it—in that work which I esteemed a progressive movement."

This act intensified his interest. He redoubled his efforts, and elaborated his experiments. He combined with Dr. S. B. Palmer and organized what was known as "The New Departure," and did better and more scientific work than had previously been done. They gave of their lives in a labor of service and love; they sacrificed and we are reaping the benefit. They cut the trail which Black and Noyes and Kester and others have graded into a highway which we may travel in our automobiles.

Opposed to them, were such men as Elisha Townsend, Johnathan Taft, J. D. White, Robert Arthur, Louis Jack, Bonwill, Krause, Allport, Cushing, J. H. McKellops and scores of others who condemned it as unfit for professional use, and would extract a tooth rather than resort to this means of saving it. But some of them lived long enough to change their minds.

Then follow a series of minor waves, such as "Arsenical paste for destroying pulps; A theory that saleratus was the great cause of tooth decay; Hypnotism (1855), as means of painless operations; Local anesthesia by either spray; Oxychloride of zinc, which promised to be the ideal filling. But the next *great* wave was induced by the discovery of the cohesive property of gold by Dr. Wescott of Syracuse, N. Y. It has been cumulative from the first. The earliest form put upon the market was Watts sponge gold. It was very uneven in preparation, and while one package worked admirably, the next would be almost useless. The idea of annealing which greatly facilitated its use, was first suggested by Dr. John W. Spear in 1855.

The possibilities of dental restoration were so greatly enhanced by this discovery that many men went wild with enthusiasm over it, and even sacrificed their lives in working it, as for instance, Marshall H. Webb of whom it is told that when a patient called to have a tooth extracted, he said, "It will cost you fifty cents to have that tooth extracted, but if you will let me fill it first, I will extract it for nothing." He died while yet a young man, and the records fail to show what became of his patients. He built beautiful monuments, but not more so than many other men, for I think all the profession take pride in the manipulation of this most alluring of metals. Many have helped in the development of the work, such as Dr. Robert Arthur of Philadelphia, Dr. E. Honsinger of Chicago, and thousands of others whom I will not mention, have contributed their life's labor to the perfection of this method which has probably meant more to the welfare of human teeth than any other one ideal for which we have striven. Could anything be more romantic than these thousands of unnamed, working and serving their fellow men?

Along with this wave and coincident, because of means for perfecting the use of cohesive gold, was the discovery of the rubber dam by Dr. S. C. Barnum. This great soul, generously and with true professional spirit, gave to the profession, the idea, but it was not without compensation, for it is a greater monument than stands to the credit of any general, for it is a monument to generosity and love. instead of hate and revenge.

And yet, Gentlemen! It has been and is a fad, and frequently an imposition upon the patient by the operator, who is not willing to take the time and care to do without it.

It seems fitting here to mention "Extension for prevention," to follow up the sequence (but cronologically, it should come later). In this great work, Dr. Black, together with his able assistants, Dr. Fred B. Noyes and others, worked out, in a scientific way, the principles of cavity preparation for filling, with the idea of preventing recurrence of decay, which is absolutely fundamental and irrefutable. And while not every man follows it in detail, most desire to do so. But the enthusiast has made a fad of it, and with "just two or three more cuts of the chisel," he extends the cavity, where, when filled by the most skillful, it becomes a glaring example of how a fine mechanic may disfigure a patient's appearance. Or he cuts so broadly and extensively across the grinding surface to make a secure anchorage for the filling, that the whole inner cusp of the biscupid or molar is frequently broken off, from what was to begin with, a pretty good tooth. And this he calls the application of Dr. Black's principle, and lauds Dr. Black for this satisfactory method of mechanically mutilating teeth.

But to return to the waves of an earlier period. "The nerve capping" wave struck us with its good and ill which all must learn, I think, from experience. In 1854, a rational theory of preventing and curing abscesses (called ulceration), was promulgated. In 1866, root filling was developed, with its many failures. It was comparatively new to fill roots, and this development was the outgrowth of abscess treatment, for previous to that, an abscessed tooth was usually condemned to extraction. It was this year in which the agitation of the idea of salivation being produced by wearing a vulcanite plate was on (due, of course, to mercury in the coloring matter), and one of our great dental societies expelled two members for making them. Some of these fads swept the country at such a rate that the idea would not be recognized by its author. Such a one was put out by Dr. Robert Arthur, a man of fine mind, one of the first graduates of the Baltimore College, who had done splendid work in developing the cohesive gold idea. In 1871, he published a book advocating the cutting of the approximal surfaces of teeth to prevent decay. His idea was radical enough for he advocated cutting of surfaces not decayed, but he insisted upon preserving normal contact points. The idea swept the profession nearly off the "Doc" and resulted in a wholesale slaughter of teeth, a devastation never suspected by the author. And to the suffering public, which had come supplicating scientific treatment, to saw these great V-shaped spaces between the teeth, was like giving the child awakened and crying for food at night, a milk check, "good for one quart," to appease its hunger. And yet, Gentlemen! was it not a recognition of the great principle underlying our prophylactic treatment of today, viz, that if the surfaces of the teeth are kept clean and polished, they will not decay?

But the next great tidal wave was that of Bridge Work; its wreckage is still to be seen in every community, bridges of gold, bridges of porcelain, "bridge of sighs," cantilever bridges (with little but the cant), bridges abominable, bridges serviceable, bridges removable, bridges improvable, bridges suspension, bridges pretension, bridges glaring, bridges daring, bridges swinging, bridges clanging, bridges busted, bridges cussed, bridges filthy, dentists guilty. The half is not told, and yet underlying it is one of the greatest and most beneficial principles ever given to dentistry. The wave has reacted leaving many humiliated practitioners, many wiser dentists, as well as patients, and, also, many who are rejoicing in having found this grateful relief from a "horrid plate."

Then another series of lesser impulses, copper amalgam, alas, the mourning! many a patient wore black as a consequence of this fad. Oxyphosphate of zinc, the ideal filling—but? Implantation, with all its hopes and regrets; Cocaine and local anaesthesia. Another whirl at hypnotism; The germ theory of decay, and with this is involved the development of sterilization, the story of which would of itself make an interesting paper. It has been a story of the conscientious and scientific fight with the destructive elements of nature,one of the greatest chapters in the history of man's struggle for existence. A mastery for the day, overcoming all forms of bacterial life, has been succeeded by failure the next day. New forms not amenable to the process of sterilization have been discovered. At first, a few drops of carbolic acid in some water was sure death to all the germs. Then experiments with bichlorid of mercury, 1 to 500 and 1 to 1,000, boiling in water, boiling in soda; alcohol, sulphate of copper, lysol, phenosalyl, hydronapthol, formalin; water standing in copper vessel, and many other sure cures have been tried, all having limitations in application or effectiveness.

And so the fight has gone on, and will go on with man's broadening intelligence and clearer vision, and perfected appliances, until realization is reached.

The next great wave was *porcelain.* It was not new, but it seemed new in its adaptation. As early as 1862, Dr. B. Wood gave to the public his plan of making porcelain inlays. Later, glass inlays were worked upon; the credit of development of the porcelain inlay is not due to any one man, but to a composite of ideas. Probably no one has done more than our Reeves to make practical the plan. And then not by any means is the credit all due to the profession, for the manufacturers have made the work possible. And right here, I wish to say, parenthetically, that the romance of dentistry would be decidedly incomplete without due credit being given to the manufacturers who have universally given us the best of materials and workmanship in our equipment, and thereby made possible many things otherwise unattainable.

The porcelain fad has developed the dentist and his patient esthetically, more than any other one idea ever presented to the profession. It has made better workmen of all who have mastered it. It has made a demand for an abatement of glaring and conspicuous fillings and crowns; it has been abused, but it is not dead, nor will it die until the "ideal filling" is produced and that is not yet in sight.

Another series of minor spasms: Cataphoresis; The gold inlay; Orthodontia, as developed by Drs. Case and Angle, has revolutionized ideas in correction of malformations. We are not all masters, nor ever expect to be, and the work really belongs to the specialist, consequently can hardly be classed as a fad, but rather a great triumph in bloodless surgery. *Pyorrhea treatment,* does any one *know* all about it yet? Porcelain jacket crowns, a wonderful step, but not as strong as cast steel, nor applicable to every case, where the patient has the price. Silicate cement, which makes many promises yet unfulfilled.

Now we see advancing, yes, already upon us, what is it? A tidal wave? Yes, with a supplemental one, yet not really supplemental for they are not together nor yet contesting. The great overwhelming wave is *casting* in its many forms and applications. The minor move in prophylaxis. Undoubtedly casting is the most revolutionary process ever given to dentistry. The idea, so far as I am able to learn, originated with a Frenchman who presented a paper upon it about 1890, but the development and adaptation is the work of our beloved Taggart, who has given us many excellent and practical ideas. The possibilities are almost unlimited; the abuses will be many and glaring. It is, however, the consummation of art, in mechanical repair.

The peculiar thing is that practically all of the work of dentistry up to the present has been upon the repair, and the development of means to that end, while almost nothing has been done in the line of prevention.

Under the watch word of "prophylaxis," an effort is being made to learn some things we ought to know. First, if the theory is true, that clean teeth will not decay. Second, how to clean teeth and how to teach our patients. Third, if the theory is true, how often must the environment of teeth be changed. Fourth, how can we educate the public. Dr. D. D. Smith of Philadelphia has been doing fine work in this line for ten years and more; our Dr. James has convinced himself of the truth of the theory and it attaining remarkable results, and many others are doing excellent work, making records and compiling statistics. This line of work presents as great possibilities for professional development as anything today interesting the profession.

Among the large ideals of the profession and professional cooperation was that of a Dental Life Insurance Company agitated about 1870. This came to naught, but in 1888 Dr. Crouse, through his indomitable will and indefatigable labor, succeeded in organizing the "Dental Protective Association," having about six thousand members, the result of which has been to protect the whole dental profession from fraudulent patent royalties, to the amount of millions of dollars. Dr. Crouse had the ideal of organizing a great Cooperative Dental Supply Company, and while this has not been realized, it was due to the fact that we are not yet far enough along for co-operation which requires more than professional courtesy. It requires brotherly love. I wish to acknowledge my personal and professional obligation to Dr. Crouse for his service to me.

Here I would like to write a series of biographies of those we have loved, still love and revere. As I go back over the literature of the past seventy-five years, my heart goes out to these men who have wrought so faithfully for us in the building of a profession. I come to know them and love them, and as the perspective of time blends their lives softly into the great professional light of progress, there is no harshness, only loving remembrance of helpful lives.

These biographies would contain words of gratitude to Dr. James E. Garretson for a life's inspiration. There would be volumes of appreciative expression to such men as White and Taft, McQuillen, Richmond, Townsend, Bogue, Atkinson, Jack, Bonwill, Webb, Darby, Flagg, Arthur, Barnum, McKellops, Allport, Cushing, Barrett, Honsinger, Judd, Kitchen, Kennicott, Truman, Taylor and many others. There would be an attempt to express my obligation to Dr. G. V. Black for services rendered and the son he has given us. They would contain words of love and esteem for Dr. Edmund Noyes for his fraternal and paternal kindness and the son *he* has given us; and to the sons, Dr. Arthur Black and Dr. Fred B. Noyes, there would be my grateful appreciation for what they have done and are doing for the making of a great profession. There would be a glowing tribute to Dr. W. H. Taggart for his many services; to Dr. C. E. Bentley for his inspiring words. There would be words of love, gratitude and appreciation for Perry, Reid, Roach, Hinkins, Prothero, Haskell, Johnson, Cormany, Pruyn, Haskins, Frazee, Hazel, Hanaford, Koch, Cook, Gethro, Helm, Waltz, Peck, Rohland, Pritchett, Harlan, MaWhinney, Kirk, Allen, Ottolengui, Duncan, Gilmer, Brophy, Goslee, Buckley, Gallie, Royce and more than a thousand others, for every man in the profession is doing his best to help, but we hope and expect him to do more.

I would there were time and space to go into reminiscences, to tell of Dr. Black's resolution forty years ago to devote at least one hour a day to study. How he has kept that resolution. How he has wrought and worked and given of himself, for professional advancement. I would like to narrate Dr. Cushing's sacrifice, and Dr. Taggart's devotion to development of the casting idea.

I should like to go into the philosophy of the contending forces which develop the professional ideal. The conserving force on the one hand, which is willing to let "well enough alone." The urge on the other which is constantly reaching out to greater possibilities, for the attitude toward life and things means everything for attainment. As Ella Wheeler Wilcox expresses it:

"One ship drives east and another drives west,
With the self-same winds that blow;
'Tis the set of the sails, and not the gales,
Which tell us the way to go.

"Like the winds of the sea are the ways of Fate,
As we voyage along through life,
'Tis the set of the soul that decides the goal,
And not the calm or the strife."

I have given you a short sketch of the impulses which have moved our predecessors, and which we recognize as the Professional Urge. The Grand Passion, The Hope of Hopes. The hope that we, too, may contribute something to make life better and our profession grander. They work for those they never saw, for generations yet to come. They wrought amid the scoffs and jeers of their time, for a reward they knew not of. And we bring them today our loving tribute for their generous sacrifices to their professional ideals.

Out of their fads and impulses have come the progress and enrichment of the profession, so out of our enthusiasm and work and co-operation, may our profession be advanced, our loves fulfilled, our services triumphant, our ideals realized.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting of the Chicago-Odontographic Society was held in the Chicago Public Library Building on Tuesday evening, April 21, 1908, at 7:45 p. m.

The president of the society, Dr. F. E Roach, occupied the chair.

Dr. E. J. Perry was the essayist of the evening, and read a paper entitled: "Imagination as a Factor in the Sale of Professional Services."

DISCUSSION.

Dr. T. L. Gilmer:

Mr. Chairman and Gentlemen: I am, as I know all of you are, in hearty accord with the spirit and tone of the paper. We who know Dr. Perry know that he is honest, and that what he has said has been said from the heart.

I have not had time to study the paper, and on that account am not able to discuss the subject with any degree of satisfaction to myself or to you. I am somewhat mystified, probably owing to my obtuseness, as to the Doctor's meaning of the word "imagination" in connection with the subject. It does not seem to me to apply. He seems to mean that the dentist in using his imagination is working under false pretenses. My idea of the meaning of the word "imagination" is that it is a mental conception. It is true, as the doctor has said, that by using imagination or this mental conception to deceive the people, we certainly lower the standard of dentistry. I think dentistry has been, and is being lowered by men who use deception for the purpose of personal gain. That sort of quackery is the worst sort of quackery. I respect the men who advertise in the paper to do things cheaper and things no one else can do, far more than the quack who pretends to be ethical, but who at heart and in practice is a sly, slick quack.

There are legitimate and illegitimate ways of advertising. A man has a right, it seems to me, to advertise himself, that is, to become known. How would a young man ever build up a practice if he locked himself up and kept away from his fellow beings? It is right that a young professional man should gain acquaintances in legitimate ways. I do not mean that he should work clubs or churches, but he has the right in modest ways to gain the acquaintance of good people, who may become his patients. A man may advertise himself in the manner indicated, and be entirely ethical, and it is really the only method of advertising that is legitimate.

Dr. Perry says that a man may use music and art, or any other accomplishments he may be possessed of, for the purpose of gaining practice, and still be within the bounds of ethics. This is true, but if the temptation is strong he may use these to such an extent to smack of quackishness.

Some men brag, both to other dentists and the laity as well, about their big fees, about how much they are earning. It seems to me that this is unethical, it is certainly bad taste. We know of some such men. It seems to me that if one has this habit it is pretty good evidence that such a one is a quack. Dentists, as a rule, do not get as much for their services as they should. As a rule we are bad business men, we are inclined to give away service that should be paid for. The lawyer doesn't give his opinion and services free, neither does the general practitioner of medicine. But I do not believe, on the other hand in excessive fees. I do not believe it pays to exact fees beyond the real value of the service rendered. Did we get paid for everything we do, as we should, we would not need to exact excessive fees from the few in order to gain a competence. I am perfectly agreed with those who believe in good fees, but believe that excessive charges may redound to ones hurt. We should give value received for money exacted.

Dr. J. G. Reid:

I am glad that the essayist was bold enough to explain to you why he read this paper before this body, and I am proud of the fact that I was one of the persons who handled the goad to induce him to read it. I think that the paper is an unusual one in this respect, that it has presented this question of ethics in possibly a new way, at least it has got a new coat put upon it, and is very different from the papers that are usually presented and discussed from an ethical standpoint. I do not believe that there is any one in the profession of dentistry in the city of Chicago that has any higher respect for what I believe to be true ethics than I myself have. I believe I can honestly and consistently stand before you and say I have been an ethical man as long as I have been in the practice of dentistry, and I have never made any pretense of ethics of any kind or description, other than to emphasize the one fact that has been presented to you in this paper, that the way to conduct a professional business is to be honest in your professional services. It does not amount to anything else. A man may not become rich, and I believe I can say that almost all true ethical men are not rich. The ethics of the profession do not necessarily demand a rich man in order to be a successful and ethical man. Riches do not mean that. The best heritage that a man can leave is that of having done the greatest good to the greatest number of people in his professional life. That is true ethics, and that in my mind, should be the basis of every profession. I believe we should be honest with the people whom we serve, and that we should serve them to the best of our ability. Equip yourselves to give the best service possible. Put yourselves in a position where you can acquire the information, and then give your people the benefit of it. Then you will leave a heritage that is ethical, and you will have done your duty. I believe that is one of the most important points brought out in the paper, and, in fact, the whole paper is based upon that very proposition.

Dr. Gilmer discussed the paper very thoroughly, and spoke of some things which I had thought of speaking about. He has covered the ground in a much better way then I could, and there is no excuse for reasserting that which he has already stated. A pretender I haven't much use for. The men with long-tailed coats and red ties are very impressive. They appeal to you. Look, there he goes down the street. Now, isn't he a dresser? Now, I believe a man can dress modestly, and avoid such pretensions. I am not speaking unpleasantly about them, but you have seen it, and the ones you have seen I have seen, and I know what it means. It is false pretense. It is that pretense which says: "Look at me; I am on the street now; take me." (Laughter.) I have no use for that.

Dr. R. J. Cruise:

Mr. Chairman: I am sorry I put on a white vest tonight. Because of my sincere regard and respect for my friend and former teacher, Dr. Perry, I extend to him my hearty thanks and congratulations. I am at a loss to know why Dr. Buckley should have called upon me to discuss this paper, but as a mutual friend of ours was standing out there in the hall he remarked: "I see you are down for a discussion." I made that same remark to him, and he said: "Well, you know, the Irish are always noted for lively imaginations, so possibly John thought you could throw a little light on the subject. (Laughter.)

Now, as to the paper, I thank Dr. Perry for everything except that I have not seen the paper at all, and have only had an opportunity to hear it read a few minutes ago. I therefore start out on the discussion of the paper at a disadvantage. Dr. Perry has opened up a topic of deeper import than his paper would seem to indicate; possibly it is his modesty. He has brought us to consider a subject which really belongs to mental philosophy, and I have a criticism to make, to begin with, and that is, that he has entered upon the discussion of this subject, and, philosopher that he is, he has not followed the first principle of philosophy, which is, to give a clear definition of the subject to be discussed. I dare say that very few of us could, off hand, give a concise, plain, everyday definition of imagination, to find one we must go to the schools of mental philosophy, and there under "atheses" we find a definition which we can all very easily understand. It reads as follows: "Imagination, or imagining, is the action of the mind in the reflection or elaboration of ideas, either true or false." Starting out with that definition I think Dr. Perry makes a mistake when he says that men who use the imagination in the sale of their professional services are fundamentally wrong. I do not agree with him. The definition in conjunction with the title of the paper gives us an opportunity to ask a question: In how far is it correct, is it legal, and ethical, for us to use the imagination in the reflection and elaboration of ideas in the sale of professional services—ideas true and false? As regards the former I would say that the use of the imagination, in the reflection and elaboration of true ideas, need only be limited by the ability of the individual to impress his personality for good upon his patients by his eloquence, by his righteousness, by his skill. As regards the use of the imagination in the reflection and elaboration of ideas that are false if we put ourselves on a plane with the man who advertises that he places a valuable piece of prosthetic dentistry in the mouth, whereas he places there only a piece of so-called "alveolar dentistry," of which the epithet born of the famous Dr. Dowie, "stink-pot" is correct (laughter), or if in any similar way we work on the imagination of our patients we are indeed overstepping our rights, but gentlemen there is a field in which it is lawful for us to use the imagination in the reflection and elaboration of ideas that are false. There is a lawful and legal field for us to use it, and here we enter upon the consideration of something which has not been touched upon by Dr. Perry directly, but should, to my mind, be considered in the discussion of a paper of this kind; that is, that very important subject which has attracted the attention of all the professions, more especially in the last 6 or 7 years, and which field was opened up many years ago. I refer to mental therapeutics—to suggestion. Now I cannot make reference to suggestion without giving you a definition of it. Suggestion means the introduction of an idea into that part of the intellect, the subjective intelligence which presides over the body, which being placed there is accepted by the mind and produces its results spontaneously. Now here is the point: While I do not want to acknowledge for a moment that mind force is stronger than arsenic in the destruction of nerves, or that any mind force is more powerful than a good impression in the making of a perfect denture, but the combination of the two in the elaboration of ideas that may be to a certain extent false is perfectly legal and ethical, and the field for it is large and overlooked. As regards agents to be used for mental therapeutics one of the greatest authorities on this subject lays down four. To a certain extent we go back to what has already been stated, but it has not been stated along this line, and it struck me in thinking over the subject that if it were not stated I might bring it up, because we all use suggestion to a certain extent, but we may not realize the possibilities of it, or know how far we have used it scientifically. The first of the four agents laid down by this authority is the effect of the personality surrounding the one desirous of making an impression by suggestion; second, the conscious employment of the patient's unconscious mind arousing hope, fear, expectancy of what will be good, etc; third, the psychic action of the drugs which are used, and fourth, by suggestions given directly and indirectly. I have only one hesitation in bringing this point up at all, and that is by unfortunate association with cults, which cause many of us to smile with derision, the field of mental therapeutics is beclouded. There is absolutely no relation between the field of mental therapeutics and Christian Science, Dowiesm and the like. I do not want to pass criticism upon any religion, if it is doing good in the field where it is used, if it is raising the moral standard, and the social standard, but I have no patience with the man who tells me that he can cure a disease, while in the same breath he tells me that the disease does not exist. There is where I draw the distinction between the doctrines of such cults, as are held in derision by some, with regard to certain features and the true reality and etiology of suggestion.

I will not take up any more of your time. The points that have been brought out by Dr. Gilmer and by Dr. Reid have more directly covered the points of the paper. I did not see the paper at all, and might have given a more intelligent discussion of it if I had had an opportunity of seeing it, but I thank you for your attention to the points which I have brought out.

Dr. J. N. Crouse:

To say that I am disappointed in the paper, and in the discussion all the way through, except the last speaker, expresses it mildly. Dr. Perry does not know what the definition of imagination is. He does not know the result of imagination. The first training of the child is on its imagination, and a child that does not have an imaginative training in the kindergarten is robbed of something that it should have had, and something that it could use all through life. So much for imagination.

I do not know what point in the paper to take hold of, but I will give you my idea of the dental profession's business ability—that they are a set of chumps. (Laughter.) They go along, and do not imagine that they are anybody. I think they ought to be a great deal more conceited than to go hobbling along with gray hairs. It is just as legitimate to get good fees in dentistry as in surgery, or any other professional work, and it is also entirely legitimate to ask for low fees, if you see fit. I have had in my hands within three days two classes of patients. The poor I gave my services to because they were poor, and needed the service, and needed good service, which they might not have got from somebody else, as they could not pay for it. In the one case where the man had speculated, and made a great deal of money, he almost quarreled with me about my bill. I put three times onto him that I would on the man that had earned his money honestly.

Now Dr. Gilmer thinks the fees are too high——

Dr. Gilmer:

I said that sometimes the fees are too high.

Dr. Crouse:

Sometimes the fees are too high. Now, I don't care how high you get your fees if you give good service. I make a plea for good service, and a good fee for it. It is high time the dental profession woke up to the fact that we men are entitled to a compensation sufficient to enable us to live as other people live. We don't do it. This condition of the dental profession can only be remedied by the men getting in better conceit for themselves. They should imagine that they are somebody, and get good fees for their services.

It does seem to me that Dr. Perry is away off on his definition of ethics. Now good ethics is when a man goes right along without thinking of ethics, works honestly, and does not think of policy, and yet if a man does not educate his patients where they need it he will be in trouble. I have always made it a point to discuss fees as I went along until I got them to a point where I knew they understood what was coming, otherwise you are in hot water all the time. You go on and do good service, and often they will refuse to pay your bill. The only time I have had any trouble is when I imagined that the patient knew what good service was, and had been in the habit of paying for it, but when I sent in a proper bill he thought I was a robber.

I think we would better cultivate imagination in our patients, and then in ourselves, so that we can imagine what may happen here and there, and guard against it. That is my idea of imagination, and I sell my services on that basis, and I think I do it honestly. The first thing of all is to do it right. Get in earnest about it, and the other thing will follow. Lots of times I have been in the different schools, where the class has been passed over to me, and I have been requested to say something. I have said: "Boys, what do you want me to talk about?" "How to build up a practice." I have been in ten schools, and I don't think there has been a variation from that request. The first thing that a young man should be taught is to learn how to do a thing, do it right, and do it honestly, and then know that he is doing it honestly and right.

This discussion has taken on a very different turn from what I expected. I had thought Dr. Perry would present just exactly the opposite kind of a proposition, that a man should sell his services, and get compensation on his imagination. I have been educated to make use of the imagination, and I think it is entirely legitimate to control the patients by what you may call hypnotism, or whatever you may please to call it. You do that with children and with nervous patients, if you are successful, and I think it is entirely legitimate to use that element in the handling and controlling of your patients. First of all, control yourself. I have seen practitioners riled up and sore all the time. That kind of a person ought not to practice dentistry, and right there is where Christian Science comes in. I have practiced Christian Science for thirty years by learning to control myself, and not allowing myself to fret and fume over things that I can't make any better.

I would like to introduce to this society Dr. Allen G. Bennett, and ask him to say a few words to you. Dr. Bennett was the star witness in the suits against the Low bridge patents. It was his testimony that won our suits for us.

Dr. Allen B. Bennett:

Mr. President and Gentlemen: I did not come here to say anything on this subject, but I cannot let the opportunity pass without expressing my satisfaction at meeting you all. This is the first opportunity I have had to meet the dentists of Chicago, about whom I have heard and read so much during the last 15 or 20 years.

I have been very much interested in the subject under discussion tonight, but I fear that you will be disappointed if you expect me to say anything striking or startling. That seems to be the order of the evening. Sometimes there are people who are inclined to criticise the dental profession as being inclined to trickery in using the imagination improperly, and some seem to think that the profession is going to the dogs. Just here comes a grand opportunity. We hear much in this age about the square deal. We hear much about predatory wealth, and here comes our opportunity to stand up for a square deal. If all these claims be true a man has an opportunity to win distinction by simply being honest. It would be a strange country and a strange civilization if a man could achieve distinction by simple every-day honesty, and yet, according to the talk of some men we would expect such a thing to happen. I think it is only by observing the square deal that we will make real progress. To quote an old familiar saying, "Honesty is the best policy," and in making this real progress he will be helped along to further progress, at the same time keeping all that is gained.

I am sorry that I cannot say anything striking or sensational, like our friend, Dr. Crouse. You all know him, and know how to take him, but if I were to attempt to say anything in that line I fear I would be misunderstood, even though I had the ability. This is the first time, but I shall see to it that it shall not be the last time, that I will have the pleasure of meeting with you.

Dr. Warboys, of Michigan:

Mr. President: The subject under discussion this evening is one that we country practitioners do not have very much to do with. In a little town of 5,000, where there are four dentists who speak as they pass by, if one wants anything and hasn't it, he goes to his nearest neighbor, and gets it, as we have no dental depot in our town. We work very much along ethical lines. We have some imagination.

Sometimes we imagine the other fellow is working a little cheaper because he gets some business that we expected, but I suppose the same thing is true in Chicago, only you are not so well acquainted with those things here. So far as using the arts of the tailor to help in the dental business, that depends on the individual himself, his tastes. The more artistic the dentist the better will he dress. The arrangement of his office will be according to his artistic ideas, and his ability to buy. I know that when I started, my artistic tastes were very high, but my ability to buy resulted in a rented barber chair and a spool case for a cabinet. Times have changed since then. I think that a man has a right to make friends, and if he can make friends by his disposition, and he has the ability to deliver the goods professionally it is all right. So far as music is concerned, there is one man very prominent in the profession in Michigan, who is also a musician. He does not have his music in his office, but he entertains his friends, and has made a lot of friends with his voice.

The main point of the paper to me, and the one in which I was particularly interested, was the one in which the author urges us to do the work as well as we know how. That we should do every time, and the only way to do that is to feel well every minute. Don't try it when you are sick, because it won't work.

DR. F. B. NOYES:

Mr. President: I hesitate a little to take Dr. Crouse seriously, and still I do not feel like allowing it to pass without saying something about it, because I believe, gentlemen, that some of the things that were said are in danger of doing more harm than good to the young men in the profession. I do not believe that you are justified in charging a man three times as much for your services because he stole his money. If you cannot put it on another basis than that you have no right to make the charge at all.

DR. CROUSE:

I said he speculated and got his money. He did not steal it at all. I would do the same thing if I were smart enough, but I always lose when I speculate.

DR. NOYES:

The fact is, gentlemen, that the service is worth no more to a millionaire than it is to a poor man, and the millionaire will not respect you if you tell him that you are charging him three times as much for this work as you would charge some one else, any more than a millionaire would go into a store and pay at the counter three times the price that his next door neighbor pays. Now there is a different basis than that, and that basis is a legitimate one, if you are honest in your application of it. If a man considers that in his work as a dentist he is paid not for a thing that he delivers, but for a personal service; that is, that his patient pays him to use a certain amount of his energy, his vitality, his knowledge, his skill, that which is his personality, that which has cost him effort and time and patience and ability to acquire, if that is what he delivers, then he can put it upon the basis that his personal service is worth the equivalent of the personal service of the person to whom the service is rendered; in other words, that it is worth an equivalent sacrifice on the part of his patient in compensation. If he makes a crown, which is the best he can make, and the best that can be made, and does that for a person earning $10 a week, and charges that person $15 for it, it may be a greater sacrifice for that person to pay that fee than it would be if he had made the same crown for a person whose hardest effort in life is the clipping of coupons, and had charged him a hundred or a thousand dollars for it. The basis of the charge is that he is working for an equivalent personal sacrifice, not simply that the man had more money, or had got his money in a different way. Let us put the thing on the right basis, and present it to the patient on a right basis, if you are going to be honest in the effort to get a greater fee. A man ought to get the best he can afford to pay for. The dentist, needs surplus time, so that he may be doing something for his profession, and the men who have done most for their professions are the men who can attract to themselves the clientele that can afford to pay larger fees, and those men who can attract to themselves that kind of a clientele, and who do devote their surplus energy to the good if the profession are honest, while those who devote their surplus time and energy to their own amusement and enjoyment do not deserve it.

I believe that our work is worth a certain fee, and that by far the safest standard for at least the young man in the profession is to establish a definite value for the things that he does, and to stick to that value, unless there is some special reason for him to vary it. On the other hand, I will admit that I can and do admire a man who impresses the public with the value of his services, provided that he is honest in doing his work. I had the pleasure of meeting a man who is known the country over, and who is getting enormous fees. I have met a number of them, and I have found that there are differences. One is a four-flusher, who gets big fees for services that are not worth anything. Another man is square, and he gets big fees because everything that he does is the best that can be done. That kind of a man I admire. In going to him the people know that they are getting the best service that any man can render, and they are willing to pay the price; not only that, but during the execution of the work they are having the benefit of every device, regardless of its cost, that can possibly be of assistance in the perfection and rapidity of the operation or in the comfort of the patient. Those things are necessary adjuncts to that sort of a fee, and a young man who thinks that he can command those large fees without any of those things is liable to find that he has made a mistake.

Dr. E. M. S. **Fernandez**:

Mr. President, Ladies and Gentlemen: As usual the speakers have departed quite a little from the subject of the paper, nevertheless, the discussion has been quite instructive.

It reminds me of a remark that I have heard very often—that we are all crazy, that it is simply a matter of comparison, and I believe there is a great deal of truth in that remark.

In regard to Dr. Noyes' remarks in reference to the dentist doing first-class work for his patients, I would say this—that what Dr. Noyes thinks is good work, another dentist may think is a very poor piece of work.

One man's method of work may prove very satisfactory under his care and he may by such methods save a great deal of pain and many teeth for his patients, and, still another dentist using the same methods may make a complete failure of it. Also two men practicing dentistry under different methods may be successful with their patients and each one save as many teeth, although doing work under entirely different methods.

I feel that I have been benefited a great deal by Dr. Perry's paper; he has certainly given us some very excellent points which are elevating and instructive. I only regret that we do not have more such papers read before this society. I think of late we have confined ourselves too closely to cavity preparation and methods of filling them.

In regard to business principles, Mr. President, it seems to me that the mind of the human being must be educated under business principles in order to make a business man.

The way to success. Financial independence lies through persistent systematic efforts of self-development. Success is the reward of increased efficiency. To have more you must make yourself worth more. The way to have a better business is to make yourself a better business man. If you have a tank which is made to hold 1,000 cubic feet of water, you cannot put into it 2,000 cubic feet of water, but you must enlarge the tank in order to put into it more water. It is the same with the human brain. If a brain has been developed to accomplish so much business, and you wish to accomplish more, you must enlarge the brain in order to do so.

The same can be applied to dentistry. If a dentist is capable of doing $2,000 worth of business per year and wishes to enlarge his income, I know of no other way that he can accomplish it excepting by developing his business capacities.

I run my practice under business principles as well as generous methods without forgetting conservative principles. I charge as high a fee as think my services are worth and I feel that I have been successful in the science of dentistry as well as in the business part of it, and have been fortunate enough to hold my practice for many years. And, I venture to say, that if a better dentist would step into my office today to run my practice at the end of a year he would not hold one-half of it.

Now, gentlemen, I believe human generosity parallel to godliness and we should not forget the kindness and generosity we owe our fellowmen. Those of you who are able to do better than others should feel happy to be so fortunate and be lenient and merciful to those who cannot do as well, for they have as much right to live as you.

Dr. Crouse:

I do not expect to practice dentistry much longer, and I have a little plan which I will give you. I was working for a very rude man one time, who bothered me and dictated to me, and I said to him: "You run your business, and I think you have made a success of it; now, suppose you let me run mine." He said: "Doctor, I did not mean anything." I said: "It annoys me a little to have you tell me how to do things." Two or three days after that he said: "I like the way you have handled me, and I want you to charge me your full price, and add a thousand dollars to the bill."

Would you take it? I get hold of one of these rich fellows and tell this story to them. That is the milk of the cocoanut. I add to it that that is the kind of a man I like to work for, as a man can work right up to his limit and not get tired.

Dr. Gilmer:

Regarding the matter of fees I do not agree with Dr. Crouse. I do not believe in exacting three times as much from one because he has made his money from speculation. If we have grown into a wealthy practice our fees should be increased, but would not make the successful speculator pay for something that we have done for some one else. Have a maximum fee. Charge that to the rich man, and then if we wish to make a deduction to one less fortunate financially all right, but don't charge the speculator three or four times as much as our maximum to make up for it. If we wish to do charity work do it, but we should not make some one else pay our gratuities.

Dr. W. H. Taggart:

Mr. President, I do not like to interfere at this stage of the discussion, after Dr. Perry has been called upon to close, but I would like to make a few remarks in regard to fees. I was unfortunate in getting here late, and did not hear Dr. Perry's paper, but from the discussion I imagine it had something to do with fees, and the impression you make on your patients. Personally I am a great believer in the power of imagination, but that belief is not always borne out by the real facts in the case. In handling children, some of them have a great deal of imagination, and you can appeal to it, but in other cases you can play on the imagination until you tire yourself out, and you accomplish nothing by it. In cases of that kind I think it is time to resort to the upper cut in the solar plexus. I can illustrate this point by telling a story: A mother had gone to the photographer's to have Harry's picture taken. Harry was one of those little obstreporous boys that would not sit still, and from 10 until 12 o'clock he had had fourteen negatives taken, and not one of them was good. The photographer finally said: "My dear woman, you are all worn out, won't you go into the reclining room and lie down, and leave me alone with the little angel, and I will see if I can't do something for him." The mother did so. The photographer took one negative, and came into the reclining room before the mother had a chance to doze off into sleep, and said: "I have a good picture of him." They were very much pleased and went home. At night time the father was told of this circumstance, and said to Harry: "What did the photographer do to you that made you behave so nicely?" "Why," he said, "he caught me by the ears and said, 'you little devil, if you don't sit still I will break your damn neck.'" (Laughter.) That will help you in your practice. One is appealing to the imagination, and the other method is extreme the other way.

In regard to fees I believe very much as does Dr. Crouse. I do not believe the dentist ever gets too much for what he has done for his patient, especially those who are able to pay for it. If you don't ask them for it they will not pay you.

When I was practicing dentistry in the country I had a good many farmer patients. When I was charging $1.50 a filling, and eggs were 13 cents a dozen one countryman said he couldn't pay that and sell eggs for 13 cents. I said: "Why don't you get 26 cents?" He said: "I can't get 26 cents." "I said: "That is the only reason I get $1.50, because I can." If he could have got 26 cents for eggs he would have got it. Why am I not justified in getting $1.50 for a filling if I can get it? If there was ever a time when I have had bouquets and beautiful letters sent to me it was when I have charged a good fee. The only time I ever got any present when charging a fee is when I charged the highest fee I ever got for special service, and at that time the man sent me twenty-four quarts of the best whisky a man ever drank, and with it a beautiful letter. I believe if I had charged him $200 instead of $1,000 he would not have written that letter, and I would not have had the whisky. I do feel, Gentlemen, that we never get enough for the services we render.

In closing the discussion Dr. Perry said:

I only wish to thank the society for listening so patiently to the discussion. (Laughter.)

ILLINOIS STATE DENTAL SOCIETY, FORTY-FOURTH ANNUAL MEETING, SPRINGFIELD, MAY, 1908.

Discussion of the report of the committee on dental science and literature.

DR. JOHN P. BUCKLEY, of Chicago, was asked to open the discussion on this report. He said: Mr. President—I have listened to reports on dental literature before this society for a number of years, and this, in my opinion, is the most complete, the most interesting report to which this society has ever listened. We are proud of a member who will take the time and the pains to study all of the literature that has been written during the past year and present it in such an interesting manner.

Dr. Don M. Gallie of Chicago:

I was interested in the report from the beginning to the end. He began by commenting on three excellent books that have been recently issued by Dr. Black, Dr. Case and Dr. Goslee. These books are splendid; apparently they cover their respective fields completely. Undoubtedly they are the greatest books up to date; but our field of usefulness is so great and our chances to do better in the future so bright, that there will be abundant opportunity for others to cover themselves with glory.

I was interested in what he said with reference to the different waves that have come over the profession each year. Two years ago every table was discussing porcelain inlays. Last year every table was discussing the gold inlay. There is a continuation of that discussion, and he sounded a note of warning for us not to go too fast. We should remember that all lines of dental procedure have their limitations, and that is the safe stand to take. There is no one in this audience or in this country that can sing with greater fervor the song, "All Hail the Power of Taggart's Name and Fame," than I can. He has done more than any other man living to make our profession easy and perfect; at the same time, that wonderful work has its limitations, and it is only by being careful and conservative that such work can stand and live and not fall into disrepute.

Dr. Bentley gave the swan songs of Dr. Talbot more attention than they deserve. It ill becomes a man to talk about swan songs, degeneracy and dental education, when he has not done more educational work than Dr. Talbot has. A gentleman said today: "I have traveled throughout the length and breadth of this country; I have been in every state and territory in the union except three, and while I have found three or four thousand dentists who made a specialty of crown and bridge works, very few of them could make a plate." That may be the fault of the dental schools, or it may be the fault of the men themselves. The dental schools cannot make perfect orthodontists, prosthetists, or operative dentists, or inlay experts, or anything else, as a great deal depends on the men and perfection comes by practice after graduation. So I think the new society of orthodontists to which Dr. Bentley has referred should be congratulated on its work, and if they get close to the rhinologists or other specialists, all well and good. It broadens the field for us. As one who is interested in operative dentistry, I do not feel like pulling down my colors and folding my tent and silently stealing away, but with the porcelain inlay, the Ash enamel, the gold inlay—all the new things, there will still be a necessity for having an operating room five by five or more. It looks to me as though all these new things, and the intense interest manifested by the members of the profession and the great interest and desire to become skillful, mean that the profession is not overcrowded; that we are educating the people, and there will be a greater demand than ever for dentists; that they will be appreciated more and get more for their work, and we hope we will hear in the future a little less of degeneracy, imperfect dental education, or the degeneracy of dental practice. I prophesy that there is a great and glorious future for us all, and if we all do anything like what has been mentioned today, there is certainly glory in the future for us all in the practice of dentistry.

President Johnston:

We have with us today a man who has practiced dentistry for over sixty years. He lives here in Springfield. He is now eighty-seven years of age, and is an honored guest of this society. I will ask Dr. A. W. French to say a few words to you.

Dr. A. W. French of Springfield:

I did not come here prepared to make a speech, but the occasion seems to warrant a few words of acknowledgment of this honor. Very few of you were born when I commenced to study dentistry in 1845. I know no man living who has been connected with the profession so long as I have.

I was very much pleased in listening to the report. Very few of you, perhaps, remember the great change that has been made in the practice of dentistry from the time when nothing was allowed to be seen of our work. Everything was to be concealed. If you could not conceal a filling in a front tooth, for instance, you were ordered to take it out. I saw a patient this morning for whom I put in in 1862 a full upper plate, and a tooth was broken off. Teeth are liable to break off in that way. But that plate did excellent service.

I joined this society forty-one years ago at the meeting in the Methodist Church Block, Chicago, and came home with about all the honors there were to be had. Some years afterwards I attended a meeting of the society at Springfield, but there were only eighteen present. I was nominated for president, as was also another gentleman. On the first ballot there was a tie. On the second ballot the other gentleman was elected. He voted for himself; I did not. (Laughter.)

I shared in the organization of the Western Dental Society in 1865. The live dentists of St. Louis got together and determined to have a society. No state was large enough, as regards the number of dentists, to have a society. This one embraced Illinois, Iowa, Wisconsin and Indiana, and notices were sent out to a few of us country men to help them in this work. We then organized a small society which subsequently held meetings in Milwaukee, Quincy, Springfield and various other places, and we had a fine time. We had banquets, but they did not cost as much then as they do now.

After a while dentists became numerous enough to organize a state society in each state, and I participated in that work. I remember attending a meeting of the National Dental Association at Niagara Falls, N. Y., and also when it met at Cincinnati and other places. We undertook long journeys in those days and made very much progress in our meetings. There was intelligent discussion, but not very many papers were read. At that time, there was not one dentist in ten who could write a paper that was worth reading; at least, we thought so. They were not educated then as well as the dentists are today.

There is one thing I have observed about dentists to which I desire to call you attention, and that is, very few turn aside from their own profession and take up some other work incidentally, or for the purpose of recreation, or participate in public affairs to the same extent as other citizens. That is characteristic of the dentists; but, I suppose, a large proportion of physicians do the same thing. I think dentists and physicians should take an interest in things that are going on in their respective communities.

Again, the number of dentists today who are capable of adding to the literature is great as compared with the few in former times.

When we began to have societies it was hard to get men to write papers. Today you have a different class of men.

This is the first meeting of the society I have attended for a number of years, although I was a steady attendant for a great many years. I wish to thank you for the compliment you have paid me on this occasion. (Applause.)

Dr. Hart J. Goslee, of Chicago:

I marvel at the ability and capacity that Dr. Bentley has displayed in poring over all the literature of the last year for the purpose of pointing out to us those things which would interest us most. The particular feature I observed in his report was this: He aimed to give us the most radical utterances upon the various subjects, and, at the same time, the most conservative ones, and then he tried to point out those things with which we are in accord, and I take the same stand along the entire scope of the report that was taken by the reader of it.

Dr. C. S. Case of Chicago, was asked to discuss the report. He said: I would not be human if unwilling to express my appreciation of the report which has been given to us by Dr. Bentley. I have attended many meetings of this society, and I want to say, to me it was the most remarkable report upon the year's dental literature that I have ever listened to. My book, to which he referred, has been received with a great deal higher favor than I had hoped or anticipated, at this early date in its career, and I am grateful to the profession for the reception it has received, and I hope it will live in the future; but, as has been remarked, these books must not be considered as the final work for men will spring up in a year or two and write other books that will be equally good and perhaps better.

Dr. G. V. Black, of Chicago:

I was a little late in coming in, and did not know until just now that a reference had been made to what I was doing. Perhaps that reference was premature, as the ink is not dry enough yet for the books to be bound.

I listened to the report with a great deal of interest, as I always do to anything that Dr. Bentley writes. The only criticism I felt should be made, while listening to the reading of the report, was the one Dr. Gallie has mentioned of giving too much space, perhaps, to articles that were scarcely deserving of so much attention.

There was some wording in this report that was very elegant, some that was very surprising, but it is all right, it is good.

Dr. William H. Taggart, of Chicago:

I have always been a great admirer of Dr. Bentley's ability to use the English language, but I think today he has given us his masterpiece.

As Dr. Bentley has alluded to my special work and to the contributions that have been made by others in reference to it, I feel justified in making a few remarks in reference to that part of the report. Dr. Bentley said there was little chance for scientific research in respect to this process as there had been in former years in so-called operative dentistry. I think those who have taken up this subject will agree with me that there is more chance for scientific research in this particular direction than ever came from the field of soft or cohesive gold. Just think of the possibilities, gentlemen, of what may come when we know that a certain specific gravity will have everything to do with the shrinkage of metal in the casting of an inlay. Think of the possibilities in a scientfic direction which will come when men in an empirical way first, but scientifically afterward, will find out how to make the proper investment. Just think of the scientific advancement that will take place when we find the exact pressure necessary to get the best results. Do not think for a moment that there are no scientific possibilities in it. I believe that not only mechanically, but scientifically, there is a bigger field for this method than there ever was in the days of so-called operative dentistry. I, too, want to sound a note of warning. Do not let it do everything for you. A sensible man would be foolish to run riot with it, as some men do in Chicago, who come into my office bringing work that has no business to be touched by this method. They ask questions that should not be mentioned in connection with the casting process. I do feel that a step in advance is going to be made when those who are interested enough in the scientific side of it will take it up.

Dr. Bentley (closing):

I thank you very much for the kind reception you have given to my report, and the pleasant things that have been said about it.

DISCUSSION ON THE PAPER OF DR. HARNED.

Dr. Edmund Noyes, of Chicago:

Mr. President: I am very sorry for the illness in the family of Dr. Royce both as regards himself and myself. Dr. Royce was to have opened the discussion on this paper.

I will confess to you that after I had read the paper it seemed to me a matter of fact, though by no means prosaic, historical sketch rather than a romance, and the thought sent me to the dictionary to see what application the word romance might have.

Webster seems to imply that romance must have in it the element of fiction, and you have all known dentists whom you have suspected of "romancing." I believe, however, that the word romance or romantic may be fairly applied to such narratives of actual facts as are so satisfactory or unusual or marvelous as to make a similar appeal to sentiment or imagination as do the romances of fiction.

There are some operations that have appealed to my imagination very much as romances do, as, for instance, this one when I heard of it: A dentist, with a short, sharp, delicate lancet, cut a V-shaped section out of the surface of an exposed pulp, brought the lips of the wound together (I never heard of any stitches being inserted), and when the bleeding was arrested and the treatment completed, capped over the pulp and filled the tooth, expecting the pulp to live.

There are one or two things referred to historically in the paper which I happened to be able to supplement and make some little additions to. In regard to the development of the cohesive principle of gold and the building up of teeth by that means, the restoring of contour of the corners of teeth was first done with sponge gold before the cohesive property of gold foil was recognized or used. As early as October, 1846, Dr. C. T. Jackson, of Boston, had a tooth filled with sponge gold which he had prepared himself, but I do not believe the material was manufactured for use by dentists until the year 1853, when Mr. A. J. Watt, of Utica, N. Y., and Mr. Joseph Barling, of Maidstone, Kent, England, produced it almost at the same time. Watt patented his, not claiming invention but application to dental purposes, and here is some real romance for you. "One of the greatest advantages claimed for crystal gold in its various forms was its capability of being packed in moisture, or in the presence of almost any extraneous substance. It was said to have been tested by working it in water, saliva, and even flour, without destroying its cohesive properties in the least, or preventing its formation into a solid plug while in these media." . . .

Dr. A. Westcott claimed to have used sticky foil in 1840, but he made no public announcement or advocacy of it till after Robert Arthur in 1855 advised the annealing of gold and its use adhesively. Arthur advised the use of serrated instruments and kept at the profession until this material came into use, and the Western Dental Society, in St. Louis, May, 1859, passed the following resolution:

"Resolved, That to Dr. Arthur, and to him alone, the dental profession is under obligation for his liberality in laying before the profession the principle of using and welding together annealed gold, by the use of serrated pointed instruments, and that this society desire to express their thanks to him for this, one of the real improvements in the mode of operating."

Dr. Black in his notes on amalgam says that the first experiments of much value (for shrinkage or expansion) were by John Tomes in 1861. These were fillings in ivory, examined by microscope. I judge from subsequent experiments by Dr. Black these could not have been conclusive. Charles Tomes tested fillings by specific gravity in 1871. Kirby, of England, reported in 1871-2 tests in V-shaped trough, measured by micrometer screw. Dr. Thomas B. Hitchcock (New York Odontological Society, 1874) made fillings in a steel trough an inch long, measured 1-1000 inch by lever with long and short arms, and the comment which Dr. Black makes in regard to this work is, "It is very probable that if Hitchcock had lived some time longer to complete his work, we might have arrived at definite knowledge of the amalgam problem twenty-five years sooner than we did." He says also: "Much was written about amalgams, especially by J. Foster Flagg, but it was mostly from a clinical standpoint, and gave too little of accurate observation to be of scientific use."

The paper alluded to the introduction of the use of arsenic for the destruction of pulps as one of the minor waves of advancement. I have a notion, if any of us had lived at the time and afterwards, we should hardly have considered that as one of the *minor* advancements in the profession. It dates back to the year 1836, when, in a book published in New York by Dr. Shearjashub Spooner, entitled, "A Guide to Sound Teeth," he announces it as the discovery of his brother, Dr. J. R. Spooner, of Montreal, who used arsenic for the devitalization of pulps, and from that time to this it has been considered a useful mode of practice, as you all know.

One other thing I wish to refer to historically. I think it will hardly do to set so late a date as 1866 for the development of root filling. Some of the matters connected with it are very interesting. For instance, *The Cosmos* for May, 1862, quotes from the New York *Dental Journal* for March an account of a root filling in a central incisor, found a short time previous in preparing the root for a pivot crown, which had been made by Dr. Hudson, of Philadelphia, presumably twenty-five or thirty years previously. "It was in such perfect condition that it was drilled out only far enough for the pivot. This pulp had been destroyed by a red-hot wire and the canal filled at once." "This same lady had good gold fillings in others of her front teeth made by Dr. Hudson about the same time, when she was seventeen or eighteen years old." In a discussion in the Western Dental Society, reported in *News-Letter,* Vol. X, page 4, 1856-7, "Dr. J. S. Clark, of New Orleans, said he had filled the roots of teeth nine or ten years. He said the profession know how far Koecker had carried his operations in this direction, and Maynard, Harwood, Badger, and Hudson practiced it years before any of us." The same volume of the *News-Letter* reports a discussion of questions. "What success has been obtained in fang filling?" and "What is the best manner of filling the fangs of teeth?" Several, among them Drs. Bonsall and Branch, said they had little or no success. Dr. C. W. Spalding, of St. Louis, said he prided himself on his fang fillings. He cleansed the cavity and canal perfectly, and filled immediately with gold. "If the fang be healthy, the sooner the better." Dr. J. Taft and Dr. George Watt said they used the same method and had similar success. Dr. McClelland said he had such success with his fang fillings that he considered it a crime to extract a tooth unless there was abscess.

In *Cosmos* for October, 1859, Dr. J. Foster Flagg says that his father, after sufficient experience to warrant, about 1850, promulgated the method of using a small portion of cotton and creosote at the apical portion of root canals, the remainder being filled as usual with gold or amalgam. "They were all successful. He had no per cent in such cases." Dr. Flagg says he had removed such a bit of cotton after nine years and "found it perfectly pure and strongly impregnated with creosote." That appeals to me with a strong element of romance.

Dr. T. W. Pritchett of White Hall:

On reading the title of the paper, I had an impression that a romantic story necessarily involves something about a woman or women. (Laughter.).

The idea of a story beginning thousands of years ago and continued on down to the present time and no woman in it! (Laughter.)

On reading the paper over it seemed to me to be a story of the evolution of dentistry down to the present time, but only one phase of it, operative dentistry, leaving out mechanical or prosthetic dentistry—divorcing it from dentistry. Restorative or prosthetic, antedates operative dentistry, as shown by relics or specimens obtained from the Etruscan tombs, supposed to be thousands of years old—the plates and teeth showing a reasonable degree of skill in the restorative art. During the Dark Ages, as referred to by the essayist, when all the sciences and arts were in eclipse, what was known of prosthetic restoration seems to have been forgotten. We have little evidence going back much beyond one hundred years worthy of being called prosthetic restoration. These beginnings were carvings of plates and teeth out of ivory and sometimes of wood. The Chinese made beautiful duplications in form of wood. The beautiful carvings in ivory made by men seventy-five years ago astonish us today when we see them. The schools cannot teach carving up to that standard. These were discarded, after the process of swaging metallic plates was discovered. But the great impetus to prosthetic dentistry came when *porcelain* teeth were manufactured and made by pins attachable to metal plates, and the teeth soldered to them. They were not, as a rule, very comfortable and serviceable dentures, owing more to badly formed occluding surfaces of the teeth, probably, than to lack of skill in adapting the plates to the mouth. The real discovery that has made the possibilities of better dentures being made, was by Bonwill, who taught us a method of the occlusion of artificial teeth in such a manner as to exert the maximum of action with the minimum of force.

Dr. C. R. E. Koch, of Chicago:

I came over here when I had something else to do, attracted by the title of this paper. Being somewhat poetic, a romance always interests me, and as I listened to the paper my interest did not wane; but it occurred to me the writer must have trained for the ministry or for journalism. Ministers proverbially announce a text, and then preach any old thing. A newspaper man always puts headlines on his articles, and then when you look for the substance indicated by the headlines you do not find it. I want to say, that when brother Pritchett got up and deplored the fact that there was no woman in the case, he stole my thunder. (Laughter.)

So far as the historic treatment is concerned, I certainly wish to compliment Dr. Harned for having accomplished a wonderful feat of condensation. He has presented to us a historic review covering twenty-five hundred years in less than half an hour. I am especially able to realize the difficulty he had, because I have been engaged in condensing, reading and writing a history for some time, and I would like to have him give me pointers how it is done.

I wish to call attention to one thing that was not contained in the paper, namely, that while we, in this country, claim to be the originators and developers of the present dental profession of the world, we owe the impetus to France. It is rather strange that France, who assisted us in establishing our national existence by sending a contingent under the Count De Rochambeau, sent over also two men among these, Lemaire and Gardette, who became the original teachers of American dentistry. In the winter of 1782, just before the close of hostilities—the allied forces were in camp near Providence, R. I., and among the men there Gardette and Lemaire practiced and taught what was then known of dentistry. Among them was also one of the fathers of dentistry, Dr. Josiah Flagg of Boston, who received his first instruction in dentistry from these men. He became the first American born dentist who devoted his entire energy to his profession. It is rather singular that we should owe to France the liberty of this nation, and also the starting point of dentistry, which has carried its influence all over the world since. I presume, it is fair to assume that nowhere else in the world had dentistry the same opportunity to develop as here. It was a new country, with undeveloped conditions in every other respect. In Europe dentistry was controled absolutely by the medical men. It was only allowed to be practiced so far as medical men indorsed or practiced it. Here there was no such constraint, and I believe the reason why our profession made so much more progress in this country than anywhere else was because of the untrammeled conditions of mind and society, which encouraged daring. Out of this empiric daring has been developed scientific discovery and systematized practical application of skill and art.

Again, I want to thank the essayist for his excellent historic review; but I wish to express my regrets that there was no romance in it, no fiction. If we were the legislature I might move to strike out "the enacting clause."

DR. J. N. CROUSE of Chicago:

As a matter of history, the essayist told us that Barnum gave the profession the rubber dam. I wish to say, that Barnum applied for a patent and was refused. He came to Mount Carroll to see what I had. I was fooling with oiled silk; I did not know that there was such a thing as sheet rubber. He came out to see how far I could block him. Barnum showed me a great deal about the use of the rubber dam. But that was the history of it.

DR. J. M. BARCUS of Carlinville:

The smooth, easy-flowing, informing paper of Dr. Harned is delightful. This paper is characteristic of Dr. Harned. I will dismiss the first three or four pages of his paper by saying that other men have labored, and ye have entered into their labors.

Speaking of the minor or major waves that have swept over the profession, I think of the use of arsenic as a major wave. Things cease to be little when the results are great, and I think those of us who have had to fool with aching teeth would have hailed with joy the use of arsenic. It has been used with great success, as we all know. Another thing, which was not mentioned, and which I considered a major wave, is pressure anesthesia. I suppose all have discarded the use of arsenical paste in front of the molars. For my own part, I never have seen those red, yellow and brown colors coming from the use of pressure anesthesia that I have from arsenic. Now, somebody will call that a romance, I expect, but you do not need to.

As to the use of amalgam, I have more interest in it because of its being used when I was a student in the office of Dr. Flagg. I do not know whether Flagg claimed to be scientific or not, but he was a hard worker, and he fought the good fight, but came very near losing it. All the men who took up this amalgam question were engaged in a good business. Amalgam now has been redeemed and glorified by the members of this society, and we all know to whom credit is due for it. It goes without saying, amalgam will save more teeth than any other one material. If a hundred dentists were to choose a material they were capable of working with, I think they would find that amalgam today is a better tooth saver than any other we have.

I want to say a word or two with reference to the cement lining. A year ago one of the members of this Society said, in derision and despair, that he was going to throw his equipment into the lake because some one from the country espoused cement linings. In view of this cast gold inlay that is now taking the profession by storm, you have to accept all that was said about cement lining, and a little more, and I still declare it is a good thing for all gold fillings.

Dr. E. K. Blair, of Waverly:

We have heard paid to Dr. Westcott a just tribute of being the discoverer of cohesive gold. This discussion on the romance of dentistry brought to my mind the fact that the author of David Harum, one of the best novels published, was the son of Dr. Westcott, of Syracuse, New York. Let us not forget that while we give Dr. Westcott due credit for having discovered the cohesiveness of gold, he is the father of one of the best novel writers we have ever had in this country. Young Westcott was a cashier in a bank; he wrote this book, and died of tuberculosis while it was in the hands of the printers. The settlement of the estate was kept open for a year or more, and the widow enjoyed over $40,000 from the sales of this novel.

Dr. Harned (closing):

I wish to thank you very heartily for your kind reception of the paper, and I would like to answer Dr. Pritchett and Dr. Koch in this way; I am surprised that they should be the ones who looked for a woman in the case (Laughter). We all know that we can have love without woman.

I will now give you my apology, which should have come before. It is this: My subject was not "The Romance of Dentistry," but it was "Fads in Operative Dentistry." I submitted my title to Dr. Haskins, chairman of the Program Committee, and he selected "The Romance of Dentistry." He did it for the purpose of getting you here; and he is the journalist (Laughter). I wish to say to you, that it is neither a romance nor a history; it is just a paper.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

WATCHMAN—WHAT OF THE NIGHT?

Reference has frequently been made in our literature, particularly in recent years, to the spectacle of so many dentists approaching old age without the necessary means to take care of themselves comfortably after their days of useful practice are at an end. This matter cannot be agitated too frequently, if we are to improve the material status of the profession and place its members in the way of attaining independence. Not by any means that it would be desirable for a man to slave and economize and be niggardly with the idea of hoarding up something so that he may retire and quit work and rest on his oars after a few years of activity. It should be a pleasure for a man to work as long as his effectiveness is unimpaired, or in other words as long as he can be useful; but the pitiable spectacle is often presented of a man being obliged to struggle along and try to earn the bare necessities of life long after he has the ability to render the public good service and when the public has learned his limitations and are beginning to turn the cold shoulder toward him. Too frequently he finds himself bereft of even the small patronage which his feeble strength would permit him to care for, on account of the distrust which age usually brings in any pursuit demanding technical skill for its practice.

The lesson of all of this is that the young man or the man in active practice should look into the future and so conduct his affairs that he will have something when age overtakes him that will make him independent. And this is not such a very difficult thing to do, even in the practice of a profession which is supposed to bring such meager financial returns as dentistry. Most of the poverty among dentists is due to sheer carelessness or thoughtlessness, the failure to estimate the true value of a dollar, and neglect of the necessary forethought to plan one's income and expenditures so that the balance will be on the right side at the end of each year. It seems such a hard lesson for some young men to learn that the future is shaped so positively by the present that the conduct of the present becomes a very important consideration. The old adage, "As ye sow, so also shall ye reap," applies to this question as well as to one of abstract morals, and it is well for every man to pause in the fullness of his powers and ask himself—what of the night?—the night of life, or the night of illness, or the night of adversity when a man's only resources are those which he has provided for himself in his palmy days. It is worth thinking over—meaning as it often does so much for the material comfort and mental peace of one's declining years.

THE NATIONAL DENTAL ASSOCIATION.

The coming meeting of the National Association promises to be one of the best in its history. The various committees are working faithfully, and the outlook is good for a splendid program. In Boston, where the meeting is to be held, unusual preparations are being made to entertain the visitors. And Boston is so full of the history which makes the early days of the Union always interesting to the average American citizen that every one should avail himself of the opportunity to attend the meeting and see the old landmarks of some of the most stirring events of those days. It is a good time to begin the summer vacation, July 28 to 31, and we predict a large attendance.

By reference to another page in this issue, it will be seen that the Canadian Dental Association which will meet in Ottawa, the capital of the Dominion, on August 4, 5 and 6, extends a most cordial invitation to the members of the National Dental Association to come from Boston to Ottawa and attend the Canadian meeting. The dates of the two meetings admit of attendance on both and the trip from Boston to Ottawa at this season of the year is most delightful. It is seldom that such an opportunity arises for convenient attendance at both national meetings, and we trust that many in the profession on either side of the line will take advantage of it.

THE EDITOR'S DESK.

KINDNESS.

I often wonder why people do not make a wider use of the marvelous power there is in kindness. It is the greatest lever to move the hearts of men that the world has ever known—greater by far than any thing that mere ingenuity can devise, or subtlety suggest. Kindness is the king-pin of success in life, it is the prime factor in overcoming friction and making the human machinery run smoothly. If a man is your enemy you cannot disarm him in any other way so quickly or so surely as by doing him a kind act. The meanest brute that ever drew breath is not altogether insensible to the influence of kindness. Of course it takes a strong man—the very strongest in fact—to do a kindness to the man who had wronged him, and yet there is no other way of so certainly bringing about restitution. Not only this, but it develops additional strength in the man who does it.

Like begets like, and hate generates hate. We all recognize this because it is every day borne in upon us by the contentions of human kind. Every lawsuit testifies to it, every hotly contested political campaign, every occasion when men meet in conflict for individual preference. If this is true, then it must hold that kindness begets kindness. In fact, kindness accumulates at the rate of compound interest, and it is the only investment I know in which the principal is absolutely safe and the interest 100 per cent—payable in advance. I say payable in advance, because no man ever started out to do a kind act that he wasn't rewarded for it in his own consciousness, even before he lifted a hand. The mere resolve to be kind carries with it its own reward, and starts in the individual a mental and moral growth that cannot be computed.

And the peculiar thing about it is that the power of kindness can be exercised by the lowliest as well as the highest. The king upon the throne has no more privilege in this respect than the digger of ditches, and there is no other factor in human life so well calculated to destroy the distinctions of caste as this. Kindness makes the whole world kin. It breaks down the barriers of distrust, deceit, envy, jealousy, hate, and all their miserable train.

And it is so cheap. The miser's pile is not lessened by its use, and the poorest of the poor can employ it in reckless profusion. It grows by what it feeds on, and its food costs nothing.

Kindness is the most valuable asset for the young man or young woman to begin life on, and the capital stock may be had for the asking. Armed with kindness, with consideration, and with a determination to employ his talents to the highest possible proficiency, and every young man can win his way in the world and gather strength to meet the emergencies of life as he goes. Each kind act is a threefold benefit, it helps the one who performs it, the one who receives it, and the world at large is the better for it. Heap up kindness and half the trouble of life would be smothered. If to substitute happiness for unhappiness is desirable, then kindness is well worth trying.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Good Fellowship:—There is perhaps no association of men that does well without a large degree of good fellowship among its members. Good fellowship should be cultivated for the intrinsic benefit of it. It should be one of the features of all of our component societies. We can scrap among ourselves as much as we please, but when the scrapping is over we are better friends than we were before. —*G. V. Black, Chicago.*

Proximal Contact for Gold Inlays:—With the cast filling there is no longer any excuse for poor proximal contact. When the filling has been cast the point of contact can be readily seen. I have been fusing on at this point a little 22 K. gold, about the size of a pinhead.

This when finished rounds out into a small convex surface what would otherwise be a flat surface. It is also a little harder than the pure gold and thereby insures a longer life without faceting.—*L. E. Custer, Dayton, Ohio.*

Antiphlogistine in Dentistry:—Antiphlogistine has become a factor in the treatment of alveolar inflammations. If the patient is seen in time the use of an Antiphlogistine poultice will usually bring about resolution without pus formation.

My method is to place Antiphlogistine over the cheek and also to work a small quantity into a little roll of absorbent cotton, and place this between the cheek and gum. At the end of twelve or fifteen hours the poultice should be removed and a fresh one applied if necessary.—*C. A. S.*

Removing Carious Dentin:—I would unqualifiedly condemn the dental engine in removing carious dentin from a tooth, the pulp of which might be exposed by the bur. I believe the bur carries with it chips, etc., of the dentin, and from the laceration of the tissue I would not think the pulp would return to a normal condition. It would seem to me as if the best and practically the only instrument to use would be a large spoon excavator. This should be used in such a manner that it would be impossible for it to slip by any accident into the pulp chamber.—*F. W. Gethro, Chicago.*

Symptoms of a Healthy Pulp:—There is one symptom on which I rely as to whether a pulp is alive or dead. If I can get healthy sensation when I am excavating the dentin I place a good deal of reliance on it. If I do not get that, then I begin to get suspicious; I go further, but I become more cautious. But if I get healthy sensation between the enamel and dentin, I have reason to believe that the pulp is healthy. If I do not get that sensation I will apply heat, and if I get an uncomfortable sensation from the heat I conclude there is gas there and it has expanded.—*J. N. Crouse, Chicago.*

A Convenient Appliance:—Those who have no day current of electricity to run a water heater will find a quart "Thermos" bottle to answer splendidly in its stead. I have mine attached to the side of the cabinet within easy reach. It is held by a clamp, tightened by a thumb screw, with a swivel joint which allows the bottle to be turned at any angle, or inverted. This allows the water to always be within easy reach by the syringe point. The bottle is filled in the morning, the water being at the desired temperature—with a small amount of antiseptic wash added—and will remain at practically the same temperature all day.—*R. J. Hood, Sparta, Ill.*

Indications of a Hopelessly Exposed Pulp:—It is often a nice point to decide between an attempt to save the pulp or to destroy it. One of the indications to be observed relates to the color of the blood which issues from an exposed pulp. If the blood is dark in color, showing congestion, it is an unfavorable indication, but if it is bright red or arterial in character the chances are in favor of saving the pulp. Another symptom to note carefully is the response to treatment when pain is present. If the pain subsides immediately and the tooth remains perfectly comfortable after treatment, the indications are favorable, but if there is a tendency for the pain to recur at intervals, it is a doubtful case.—*E.*

Regarding Lower Plates:—I have found that a flange on each side is an advantage in that the cheeks hold the plate down and keep it from moving forward. In relieving an irritated spot, although it is readily seen, it is not always easy to locate it on the plate. Take a little moist whiting on the spatula and touch the spot, and upon replacing the plate it is readily seen. When the posterior teeth have long been removed and a partial plate worn, and later the anterior teeth are removed and a full plate worn, as the anterior gums settle and the bite shortens at this point, the posterior teeth do not shorten, and under the pressure there results irritation at the heel. The remedy is found in shortening the molars and not in filing the plate. —*L. P. Haskell, Chicago.*

Hyperemia Caused by Separating with Gutta Percha:—Since we have started to put in so many gold inlays, what will probably happen to many of us will be, that we will prepare the cavity, and when there is only a thin wall of dentin between the cavity and pulp and we want more separation, we insert a mass of gutta percha and send the patient away, with the result that the patient comes back to us with a condition of very extensive hyperemia. The only way to overcome it is to sterilize the dentin. Put in the sterilizing remedy over the dentin in the deep part of the cavity, with a thin wall of cement over it. Make your wax impression, place the gutta percha and let the patient be dismissed. The pressure will not come against the pulp and you will not carry infective material into the pulp.—*W. H. G. Logan, Chicago.*

Preventing Infection from Instrument Punctures:—As to the infection of an operator by the use of his instruments the question of immunity of the tissues in which you have introduced the organism must be taken into consideration. If you have introduced the organism into the finger, it is an active tissue, and when the tissue is in use it has the greatest amount of immunity. Therefore, many times you are not infected for that reason. As soon as you injure your finger you grasp it and squeeze out all possible infection with the blood serum, and I advocate the introduction of an antiseptic into a wound in order to be sure that the blood has been expressed out, and before it is really released, if the assistant will take a broach with some cotton wound around it and dip it in chinosol and follow up the opening as deeply as possible, you can nearly always prevent infection.—*Geo. W. Cook, Chicago.*

Tempering Instruments:—Many are deterred from the making of new tools by a "bugaboo"—the imaginary difficulty of giving a right temper to the point or blade. It is necessary to remember only two or three principles and make their application with ordinary skill that may be acquired with a little patience and practice. The temper of a point is given to it by sudden chilling, which causes a contraction and closer relation of the molecules of steel. Having heated the point to a bright red it must be transferred to the chilling medium instantly, not allowed to half or quarter cool while being transferred. What the chilling medium consists of matters little—the essential thing is temperature. I incline to the belief that for ordinary use there is nothing better than water, but the water must be cold, anywhere from the temperature of common well water fresh drawn to that of ice water. The heating of all points of ordinary size should be done over a gas or alcohol flame—not with a blowpipe.—*Garrett Newkirk, Pasadena, Cal.*

A Hint in Taking a Bite:—In taking a bite for a full denture where the patient is wearing a full plate on the opposite jaw, a convenient way of doing so without unnecessary annoyance to the patient is to build the wax rim on the wax baseplate as usual, try the wax in the mouth and trim it to the proper form. Now, instead of building more wax on the rim to obtain the impression of the teeth on the plate, remove the wax baseplate and the denture from the mouth without disarranging them. This may be accomplished by sealing the wax to the teeth at two or more points, with a hot spatula, while the patient's jaws are closed in their correct relation. Take the case to the laboratory, place the model in position in the baseplate to hold it firmly, and flow melted wax around the occlusal surfaces and the cutting edges of the teeth on the plate. This will produce the desired impression on the wax, and the correctness of the bite may be verified by removing the plate from the wax, placing the wax baseplate and the denture in the mouth and have the patient close the jaws. There are various advantages in this method which will become apparent to any practitioner who adopts it, without any further explanation.—*G. W. J.*

MEMORANDA.

WISCONSIN STATE DENTAL SOCIETY.

The thirty-eighth annual meeting of the Wisconsin State Dental Society will be held at La Crosse, July 21, 22 and 23, 1908. Wednesday and Thursday mornings will be devoted to clinics, other sessions to papers and discussions.

HARVEY N. JACKSON, *Secretary,*
Wells Building, Milwaukee.

IOWA STATE DENTAL SOCIETY.

At its recent annual meeting, held in Des Moines, the Iowa State Dental Society elected the following officers for the ensuing year: President, Dr. C. W. Bruner, Waterloo; vice-president, Dr. F. M. Hunt, Des Moines; secretary, Dr. T. F. Cooke, Burlington; treasurer, Dr. Geo. W. Slingluff, Burlington; superintendent district societies, Dr. R. H. Volland, Iowa City.

T. F. COOKE, Secretary.

ILLINOIS STATE DENTAL SOCIETY.

At the forty-fourth annual meeting of the Illinois State Dental Society, the following officers were elected during the ensuing year: President, Arthur D. Black, 31 Washington street, Chicago; vice-president, E. F. Hazell, Springfield; secretary, R. J. Hood, Sparta; treasurer, C. P. Pruyn, 92 State street, Chicago; librarian, J. T. Cummins, Metropolis.

The 1909 meeting of the society will be held at Danville, May 11, 12, 13, 14.

R. J. Hood, Secretary.
Sparta, Ill.

NEW JERSEY STATE DENTAL SOCIETY.

On account of the large increase of clinics and exhibits, the New Jersey State Dental Society have been compelled to secure larger quarters than heretofore, and the executive committee has been able to secure the beautiful new casino situated on the beach front with excellent accommodations for clinics, exhibitors and meetings, and abundant space, perfect light, and delightful ocean breeze.

The Casino is the most superior meeting place in Asbury Park and within easy access from trolleys and trains. To realize the beauties and charms of this new meeting place will necessitate attendance of the annual meeting of the New Jersey State Society meeting, commencing as heretofore announced, July 15th, and continuing through the 16th and 17th.

Charles A. Meeker, D. D. S., Secretary.
29 Fulton Street, Newark, N. J.

INVITATION TO THE CANADIAN DENTAL ASSOCIATION.

The Canadian Dental Association meets in Ottawa August 4, 5, 6, 1908, and extends an invitation to the members of the National Dental Association of the United States to attend its meeting. Arrangements have been made with the Canadian Pacific Railway Company that all tickets from the west, over the Canadian Route, to Boston will be honored via Ottawa on the return trip.

This will give those attending the National Dental Association an opportunity to visit the St. Lawrence Route, City of Montreal, and the Capital City of Canada and in this position be close to what has been termed the play ground of America. No better hunting, fishing and camping can be found than what is within the reach of the city of Ottawa. Besides the Canadian Dental Association would feel it a great honor to have with them any of their confreres of the United States who choose to accept this invitation.

PARTIAL PROGRAM OF THE NATIONAL DENTAL ASSOCIATION.

Section 1 presents the following papers: Dr. H. A. Pullen, of Buffalo, N. Y., "Orthodontia." Dr. Geo. H. Wilson, Cleveland, O., "Some Phases in the Construction of Complete Vulcanite Dentures." (Exhibiting 30 to 40 slides, showing appliances and points in construction.) Dr. Charles Channing Allen, Kansas City, Mo., "Metallurgy."

Section 2 presents the following papers: Dr. Burton Lee Thorpe, St. Louis, Mo., "The Contributions of New England Dentists." Dr. Geo. W. Weld, New York City, "Characteristics of Calcified Tissues in Two Complete Sets of Human Teeth, Free from Caries." Dr. Joseph Head, Philadelphia, Pa., "The Protecting Action of Saliva from Decalcification of Enamel by Acids."

Section 3 presents the following papers: Dr. Clyde Davis, Lincoln, Nebraska, "A Method of Treatment of Purulent Eupyema of the Maxillary Sinus." Dr. Eugene S. Talbot, Chicago, Ill., "Acidosis and Indicanuria in Diseases of the Mouth Jaws and Teeth." Dr. Thomas B. Hartzell, Minneapolis, Minn., (subject later). Dr. Arthur H. Merritt, New York City, (subject later).

RAILWAY RATES.

New England Association, which includes the territory of New England, grants a rate of a fare and one-third on certificate plan. Trunk Line Association, which includes the territory of Buffalo, Niagara Falls, N. Y., Erie and Pittsburg, Pa., Bellaire, O., Wheeling, Parkersburg and Huntington, W. Va., and points east thereof, except New England, a rate of one and three-fifths, also on certificate plan. All other territory grants summer tourists rates in existence and effective to Boston during the summer. Those using the Trunk Line rates will deposit their certificate, together with 25 cents, with the secretary, Dr. C. S. Butler, immediately on arriving at the meeting.

RECENT PATENTS OF INTEREST TO DENTISTS.

885,018. Artificial tooth, H. E. S. Chayne, New York, N. Y.

886,300. Dental vulcanizer, F. W. Korb and W. F. Hieber, Cleveland, Ohio.

886,140. Apparatus for forming dental structures, J. A. Lentz, Phoenix, Arizona Ter.

886,091. Machine for boxing toothpicks, S. S. Tainter, Dixfield, Maine.

887,181. Tooth-brush, E. D. Barnes, Tarboro, N. C.

887,577. Artificial tooth, L. and H. Bernstein, New York, N. Y.

887,478. Anterior matrix-clamp, J. W. Ivory, Philadelphia, Pa.

887,528. Dental appliance, J. B. Shafhirt, Washington, D. C.

888,297. Combined rubber-dam and tooth-backing punch, H. M. Bell, Houston, Texas.

888,138. Tooth-brush, V. C. Bell, New York, N. Y.

888,310. Dental dam-holder, C. A. Conover, Newburgh, N. Y.

888,071. Dental crown heater, E. W. Dodez, Fort Wayne, Ind.

888,011. Tooth powder holder, P. S. Hay, Montgomery, Ala.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendal building, Washington, D. C.

DR. H. NEWTON YOUNG.

In respect to the memory of Dr. H. Newton Young, the Susquehanna Dental Association of Pennsylvania at their annual meeting, May 21, 1908, adopted the following resolution:

Whereas, Death has removed from us our esteemed friend and coworker, Dr. H. Newton Young; and

Whereas, In his decease we have suffered the loss of a member who had an active and earnest interest in this association, and who had the welfare of the entire profession at heart; therefore, be it

Resolved, That we, the members of the Susquehanna Dental Association, in annual session in Williamsport this 21st day of May, 1908, while of necessity yielding to the inevitable, deeply deplore his death, and earnestly unite with the bereaved family in mourning his untimely loss, and assure them of our admiration for his high personal and professional qualities; and be it further

Resolved, That these resolutions be spread upon the records of this association, a copy sent to the bereaved family, and copies sent to the dental journals for publication.

C. S. Van Horn,
John C. Hertz,
C. C. Walker,
Committee.

CIRCULAR OF THE LOUISIANA STATE DENTAL SOCIETY.

The following circular has been sent out to the various dental societies, and a request made for publication of the questions in dental journals:

Gentlemen: Our object in writing your society is to enlist your co-operative efforts in having the president of your society appoint a committee, as our society has done, for the purpose of investigating pyorrhea alveolaris, its causes, symptoms (in its earlier stages), origin, treatment, cure and its prevention. We are to report at our next annual meeting.

This disease is the knottiest problem that confronts our profession and our mission is, therefore, to write to all dental societies with a view to getting their co-operation by appointing committees to help in this investigation, so as to concrete the opinions of the profession at large on this disease.

The list of questions which you also receive with this letter is to be answered by your committee and to be forwarded to the chairman of this committee. We hope in this way to arrive at a settlement of some of the questions, and we may in the future be able to obtain aid from the government to ferret out the cause, treatment, cure and prevention of this disease.

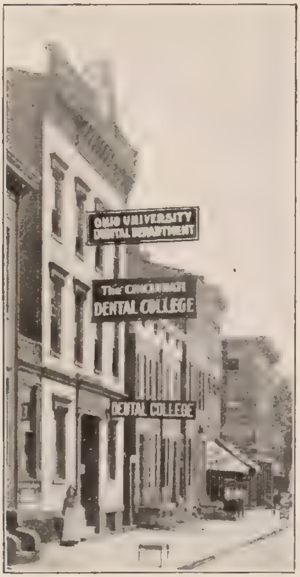
Yours fraternally,
E. H. Ramelli, Chairman.

No. 620 Canal street, New Orleans, La.
Committee: Drs. Jules J. Sarrazin, H. E. Belden, E. H. Ramelli.

Questions: Do you consider pyorrhea alveolaris incurable? Do you know of any cases that have been cured? In what stages were the cases when first under observation? Have you ever recognized the disease before serumal calculus appeared? What were the symptoms? Do you think salivary calculus has any effect on the disease? Were the patients under your observation of robust or delicate physique? Have you ever seen the disease in youth, and at what age? Do you know of any properly treated pulpless teeth being lost by the disease? Did the devitalization and root canal sterilization and filling precede or follow pyorrhea development? At what time of life do you find treatment most efficacious? Do you find pyorrhea more in males or in females? Do you find it more in the upper or lower jaw? Does the disease attack all teeth alike? Were patients ever afflicted with syphilis, tuberculosis, uricæmia, chronic indigestion or chronic constipation? Have you ever seen cases where malocclusion was a cause? Do you think autointoxication a cause? Do you think uricæmia a cause? Is it a disease of the gum? Is it a disease of the alveolar process? Is it a disease of the peridental membrane?

(It is of the utmost importance, in order to insure the success of this vital investigation, that your society should take this matter up at once and favor us with an early answer, giving the disposition decided upon at your meeting and action taken.)

THE DENTAL COLLEGES OF AMERICA


OHIO UNIVERSITY DENTAL DEPARTMENT
The CINCINNATI DENTAL COLLEGE
DENTAL COLLEGE

The Cincinnati College of Dental Surgery, Cincinnati, Ohio.
First class graduated 1894. Total number of graduates to January, 1908, 249.

Dental Department, Western Reserve University, Cleveland, Ohio.
First class graduated 1894. Total number of graduates to January, 1908, 322.

Starling Ohio Medical College—Dental Department, Columbus, Ohio.
First class graduated 1894. Total number of graduates to January, 1908, 455.

THE DENTAL COLLEGES OF AMERICA

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OHIO COLLEGE OF DENTAL SURGERY

Ohio College of Dental Surgery, Cincinnati, Ohio.
First class graduated 1846. Total number of graduates to January, 1908, 1,748.

North Pacific College of Dentistry, Portland, Ore.
First class graduated 1896. Total number of graduates to January, 1908, 254.

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COLORADO COLLEGE OF DENTAL SURGERY.

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*Curriculum requirements completed, but degree withheld until legal requirements are fulfilled, when the degree will be conferred at the following meeting of the Board of Trustees and Directors.

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THE CEMENTS AND GUTTA PERCHAS AS FILLING MATERIALS.*

BY C. B. ROHLAND, A. M., D. D. S., ALTON.

In considering dental filling materials, their use and abuse, one cannot fail to be impressed with the ever-increasing importance of the plastics in present day practice, and by "Plastics" I wish to be understood to include only, at this time, the various cements and gutta perchas. Now so marked and rapid has been this growth in their use, that it may well be claimed that they have become by far the most necessary and useful of all filling materials, by reason of their wide range of application as well as their efficiency.

Anything within the whole field of operative dentistry that can be accomplished with cohesive gold, non-cohesive gold, and the amalgams, can also be accomplished with the various cements and gutta perchas, in many cases nearly as well, in many more cases just as well, and in many other cases even better. But neither gold, in any of its forms, or even amalgam, can cover but a small portion of the field occupied by the plastics. In other words, eliminate all other filling materials, save the plastics, from the cabinet of the operative dentist, and he can still effectively perform the functions of a dentist. He can save teeth and minister effectively to the comfort of his patients. Eliminate the plastics and his power for good will be so handicapped, confined to such narrow limits, that so far as the principle requirements of the public are concerned, he might about as well abandon his office, and betake himself to the laboratory, where the chief part of his work would then lie.

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*Read before the Illinois State Dental Society, May, 1908.

Gold has been set upon a throne and worshipped for so many years as the king of all filling materials that by iteration and reiteration the public as well as the profession has become imbued with an exaggerated idea of the universality of its fitness, and thereby entailed much trouble. To deny its kingly prerogatives, in any part of one's daily practice, was wont to be considered treason, and invited reflections on one's ability. In deference to this idea, which still prevails to a large though lessening extent, many and many a tooth has had gold hammered into it, that would much better have been treated in a different way.

Gold is King!—Long live the King!—True enough! Gold *is* King, but only in his own little principality, which is composed of a few narrow townships, as compared with the whole broad province of operative dentistry, and even there, in his own kingdom, his most trusted and efficient ally is the plastic.

Which leads me to lay down another proposition, based on nearly forty years' careful observation, that through the injudicious use of gold, fully as many teeth have been destroyed as have been saved. Now this statement is not predicated alone on the work of a few selected individual operators but on the work of the entire profession, taken in the aggregate, including all from top to bottom. Neither do I include in this arraignment only the teeth actually injured and lost through the strenuous handling received in the insertion of massive gold fillings, though the list, if there could be one, would not by any means be a short one, but I include also the lost teeth of the numberless patients who were ruined as patients, because of their dread due to previous suffering. There is not a dentist of any experience here within the sound of my voice, but can recall patient after patient, old and young, who at first submitted willingly enough, but at last lost courage, and come only when dire necessity compelled or came too late, or not at all.

Now the injudicious use of gold has been unquestionably directly responsible for many of these cases. Taking these indirect loses then also into consideration, my estimate will be found to be not at all exaggerated.

Here, then, is where the plastic reigns supreme. While saving teeth, it also frequently saves patients for further service.

Now I have excluded the gold inlay from this arraignment, because notwithstanding the wildly enthusiastic claims of these frenzied cast gold lunatics, who are now running amuck through the length and breadth of the land, metaphorically "shooting up the town," and ruthlessly trampling under foot all the most sacred traditions of operative dentistry, and even threatening to turn the whole scheme of practice upside down. After all—in spite of their bluster—they are a very helpless lot! Their vaunted inlay is nothing after all but a cement filling with a covering of porcelain or gold to protect it. Set the inlay in the tooth with saliva, and it may be a thing of beauty, but in point of usefulness, it will be but a hollow mockery. Without cement, the most beautiful and artistic creation of the inlay worker is of no more use than a last year's bird's nest. Combined with cement, it gives promise of great things—great things. Whether quite as great as expected, remains to be seen.

The apparently unrestrained enthusiasm of its devotees, so suggestive of a most glorious jag, is also suggestive—of a next day's headache. Its seductive suggestions are more exhilarating to the earnest worker than champagne. Very few have escaped the spell of its fascination. And yet, when at times one comes across the beautiful, clean, clear, sharp margins of fillings made the old way with gold foil and the plugger, that have stood the test of time, unaffected, and compares them with the very best marginal adaptation of the best inlay efforts—well, to a man up a tree, who is still sober enough to stay there, it cannot fail to be just the least bit suggestive, until he almost fancies he can hear amid the din of the tom toms, the soft strains of that good old hymn "Oh, What Will the Harvest Be?" This remark is made, not in the way of criticism, but solely in the interests of sanity.

Anyway, no matter what the answer, the inlay worker is compelled after all to take his hat off to the cements as the most important element, the only saving clause in his filling—the only feature that gives it any standing whatever as a tooth saver.

Now, in view of the indisputable facts already mentioned that whatever can be filled and saved with gold or amalgam, can also be filled and saved with the plastics with but little more watchfulness, that in children's teeth, in frail teeth, in frail patients it is more effective, humane and desirable, that the problem of root filling has been simplified and solved by its use, that the inlay worker is absolutely helpless without it, that many of the problems confronting us in daily practice could not be handled without it, that in short, the dentist deprived of it would be like Samson shorn of his locks, is it not about time that gold be dethroned and a real king, the plastic, put in its place? I will not take up your time discussing the use and place of gutta percha in dentistry. It has been with us so long that every one is familiar with its nature and its possibilities. It has found a place for itself in every office and has become indispensable. It would be difficult to find a substitute. As a help in the care of our little patients, as a standby in root filling, in crown setting, in cavity filling, either as a temporary expedient, or even for tentative permanent purposes to tide over the weak, the nervous, the sick, the faint heart, surely one could hardly keep house without it, with proper manipulation it may be made to serve indefinitely from months to years, according to the condition. If intended to last indefinitely the principal precaution to be observed is to be sure not to overheat it and—give it a lining of cement.

The various cements, notwithstanding the uncertainties of their behavior, and the acknowledged fact, in spite of the enthusiastic advertiser, that the manufacturers are still groping after the ideal, is now occupying, as I have said, such a large and important place in daily practice that it is difficult to imagine how the dentist could now practice without it. This apparently erratic behavior, which so often affects its durability and the confidence of the dentist, it is reasonable to assume will in time be largely if not entirely overcome. Improvements are constantly being made. For years amalgam was denounced as a tricky filling material, and justly so. But, thanks to the investigations of our Doctor Black, and the consequent more intelligent efforts of the manufacturer, much of this uncertainty has been eliminated, and amalgam now, with better understanding—and a lining of cement—is much more reliable as a tooth saver.

I question whether this erratic behavior of the cements is not after all more due to their manipulation—to the varied personal equation in the mix, than to the inherent character of the material itself. Observe different operators and scarcely two will be alike in their treatment and manipulation of the material. The place where kept, the condition and character of the vessels containing the powder and the liquids, the mixing slab, the proportions of powder and liquid, the rapidity, the thoroughness, the consistency of the mix, the method of insertion, the treatment of the filling during crystallization and the processes used in finishing, as well as atmospheric conditions, all must have a powerful influence on the finished product. Which leads me to observe that whatever cements one may elect to use it is but fair to the manufacturer that his instructions be followed to the letter. By reason of his close study, his wide experimentation, as well as his own direct personal interest, he is most desirous to bring out the very best of which his product is capable, and naturally knows best how to do it.

The dentist, like the manufacturer, is vitally interested in the same result, and of necessity he must not fail to do his part. That the manufacturer of cements has made great strides toward the improvement of his products, is made clear by a comparison of the present cements with the earlier ones. Without even going outside our own society, compare our own Ames products, the Fellowship New Process and the Hewitt cement with the old Welsh oxyphosphate for instance, which had such a large run ten years ago.

One can find therein much encouragement for the belief that an approximation at all events toward the ideal filling may not be so very far off.

For example, among the later products, the silicate cements in one respect at least seem almost to have reached perfection. Their appearance, when first put in, leaves very little to be desired in this respect being a close rival to the best porcelain products. As to the other qualities necessary to make them ideal the testimony is conflicting. That they shrink and that they are porous, both undesirable if not fatal qualities, are among the most serious charges made.

On the other hand, Doctor W. V. B. Ames, than whom there is today no greater authority and to whose researches undoubtedly much of the improvement in the present manufacture of cements is due, is of the opinion that some of the silicate cements of today have already made a place for themselves, and that this place is in the filling of such small cavities as are not subject to direct occlusion or abrasion, as in small approximal, or cervical margin cavities. He thinks further that unquestionably these materials will be greatly improved, but that even now "these calcium, silica and alumina oxyphosphates will withstand the products of fermentation and putrefaction under conditions in which an oxyphosphate of zinc would be rapidly destroyed. So in these small cavities between incisors, for instance, where saliva stagnates and food debris ferments and putrifies, I expect them to be very useful and a Godsend to dentist and patient as compared with the making of gold fillings or porcelain inlays."

Now this testimony, coming from the source it does, is of sufficient importance to indicate that there is something in this new product that may be worth our very serious consideration. In my own hands the results have not yet been very satisfactory. This, however, may have been and probably was entirely due to faulty manipulation as my experience has been limited to but a few kinds and a limited number of cases.

One of the old cements that I believe does not at the present time receive as much attention, either from the dentist or the manufacturer as its virtues merit, is the oxychloride of zinc. It contains within itself invaluable qualities. As a root canal filling it has in some ways, in my judgment, no equal. It can be worked into the most minute and tortuous of canals. It is antiseptic, in canals it is durable—in cavities it is preservative, stimulating. It is, however, unfortunately soluble in the oral fluids, but unlike the phosphates, decay will not burrow under it. Aside from the more or less irritation which sometimes follows its use in root canals, but which usually soon passes away permanently, I have more confidence in it there than in anything else. To avoid this irritation I sometimes fill the apex with gutta percha and the balance of the canal and pulp chamber with the oxychloride. I remember seeing an account somewhere of some experiments on the efficacy of the various cements and gutta perchas in excluding from cavities microorganisms. The results showed that the only one of all the filling materials experimented with, that absolutely excluded germs, was the oxychloride of zinc. These conclusions have not, so far as I know, been contradicted. Since then whatever I may fill the root canals with I always fill the pulp chamber with this cement. I believe it to be good practice.

Could the virtues of the silicate, the oxyphosphate and the oxychloride be combined, it would seem as though very little more could be desired.

I once heard the suggestion made that perhaps in the oxychloride as a point of departure in experimentation, might possibly be found the germ of the future cement filling. Whether that be so or not, even now—*The Plastic is King! Long live the King!*

AMALGAM.*

BY C. P. PRUYN, M. D., D. D. S., CHICAGO.

The filling of cavities of decay in teeth with amalgam has been going on for more than seventy years, and while many mistakes have been made in its preparation, a very much better quality of material has been furnished us during the last ten years then ever before. The extensive series of experiments that were made several years since in the expansibility and contractibility of different formulae by Dr. G. V. Black and his assistant, and also by Dr. P. J. Kester, has stimulated all manufacturers of this material to furnish us with an alloy that is very much less eccentric in its behavior than were the alloys of former years, and while perfection has not yet been reached in the various combinations of different metals to make an unchanging, non-shrinkable, non-expansible amalgam, we do rejoice in the fact that a marked advance has been made during recent years, and the writer of this paper predicts that within the next quarter of a century still more startling improvements will be made in the manufacture and use of alloys for filling teeth. There are many cavities difficult of access where gold fillings or gold inlays or porcelain inlays are not indicated, where this material can be used with very much better advantage as a saver of frail teeth, than anything else known to mankind. And often in such places the color objection to its use is almost nil, because it may be placed where it will not show in ordinary conversation. I would not say that as teeth need saving it is the very best material to use, but I will say that it is the very best material to use in certain cases. And those certain cases are the distal surfaces of badly decayed bicuspids and molars where gold is used on the mesial and occlusal surfaces of the same teeth; and the two materials, gold and amalgam, placed in complete apposition or physical contact in the same tooth, so that the chemical or metallic affinities of the dissimilar metals are satisfied by their absolute contact, so that the baser of the combination of metals becomes oxidized or sulphidized, and the king of metals remains unusually bright and clean. And as the result of this physical union a peculiar molecular condition results in the amalgam, which seems to assist it in retaining its form and resistance to stress or force. I think it is a well-recognized fact that around such amalgam fillings as above described there seems to be some influence at work which inhibits the proliferation and growth of the microbes of dental caries. What that something is, our bacteriologists and pathologists have not yet found out, but the fact remains that frail teeth filled in this manner will resist the ravages of caries very much better than if filled with either gold or amalgam alone.

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*Read before the Illinois State Dental Society, May, 1908.

If such fairly satisfactory work can be done with the old inferior forms of amalgam when used with conscientious thoroughness, have we not a perfect right to expect very much better results from the more recent and scientifically prepared alloys that are on the market today?

The curses that have been hurled at amalgam *per se* might much better have been hurled at the heads of the careless, slovenly operators who have brought this most excellent material into disgrace. When men think amalgam is a cheap, poor material with which to fill cavities in teeth, it is to be assumed, from what we see of their operations, that they did not take the necessary trouble to properly prepare the cavities and to properly insert the fillings. Cavity preparation for amalgam should differ from that for gold, in that no marginal beveled edges should be left, as amalgam will not retain an attenuated edge like gold, and this little error has often been the cause of failures, because the source of the trouble was not recognized. Another cause of failure in amalgam fillings is improper or incomplete insertion or condensation. Large masses of amalgam in comparison with the size of the cavity and large pluggers with which to insert and condense the filling can not produce as satisfactory results as small masses and relatively small pluggers. The first pieces of amalgam placed in the cavity should be a little softer than those that follow, so that the softer pieces can readily be adapted to all pits, grooves or angles, and the subsequent pieces being drier than the preceding ones can, by trituration and packing, be united to those that have gone in before, and a thoroughly homogeneous mass be the result, with the obliteration of air spaces between the filling and cavity walls.

I make this bold statement that no one should fill a cavity of decay in a patient's mouth who has not experimented with the use of amalgam in filling glass tubes. If any one thinks he can make a perfect filling in a tooth, just let him fill a glass tube with amalgam and see how difficult it is to fill all the air spaces and make a beautiful homogeneous mass of it. And I will venture the assertion that he will have the egotism or conceit taken out of him in short order. Of course, you understand that it is possible to take amalgam mixed so very soft that a glass tube can be very easily filled, and all air spaces obliterated, but I am not referring to that kind of slovenly operating. I refer to the use of amalgam that is sufficiently dry, so that it will have all the edge strength it is capable of, and still be soft enough to remain in a homogeneous mass and be in absolute contact with the walls of the tube or cavity. It takes time to insert a good amalgam filling, and it should always be done under absolute conditions of dryness, the same as with the use of cohesive gold, if you wish to obtain the best results. I take pleasure in saying that I am as proud of my amalgam as I am of my gold fillings, particularly so when I see those that have done excellent service for thirty or more years, and are still looking as though they were put in six months ago. This is no idle dream or brag or vagary of the mind. Having practiced dentistry in Chicago for the last thirty-two years, my fellow dentists and myself frequently see some of these old amalgam fillings that make us feel proud of that much-stigmatized, much-maligned material, that has in it the possibility of saving frail teeth when properly and conscientiously used. I pray your kind indulgence for these personal reminiscences, because I could see no other way of telling you the truth, but by way of personal experience, and challenge my confreres who have worked by my side for years to state in open meeting the truth or falsity of the above broad claim made in this paper.

In closing, allow me to say that I still put in fillings of gold foil, gold and tin, cast gold inlays, porcelain inlays, gutta percha and cement, according to the indications, and that while I am a believer in the discriminate use of amalgam, I probably put in more gold fillings than all the others together.

THE USE OF NON-COHESIVE GOLD IN FILLING TEETH.*

BY C. E. BELLCHAMBER, D. D. S., EFFINGHAM.

In presenting this paper to you upon the subject of non-cohesive gold and its use I will have to give you only my experience with the material over a period of ten years use.

My method is not new, nor do I claim it to be superior to all other ways of manipulating it, but in my hands it has proven very satisfactory, not only to myself, but to my patients.

So I trust that you may be patient for a short while until I give my system of manipulating non-cohesive gold.

As for cavity preparation be it understood I use exclusively what is known as Dr. Black's system of forming cavities.

The best preparation of non-cohesive gold is what is known as Abbeys as it is strictly non-cohesive, and cannot be made cohesive by annealing as can other golds. If you do not have this gold you can make use of any of the gold foils by exposing their surfaces to ammonia gas for awhile. A good way to do this is to take several sheets of gold and place in a drawer of the cabinet also a small dish in which a little ammonia is placed. Exposing the gold to the ammonia there is a thin film of foreign matter deposited causing the gold to become non-cohesive. It is best to expose the gold this way a few hours before using it. The way of preparing gold for the cavity, is to first estimate the size of cavity to be filled, and cut gold in proportionate size. For the ordinary cavity take a sheet of No. 4 gold foil and cut in half. Then with a spatula fold gold several times until you make a ribbon of it the width you wish your gold to be. Then to roll gold use a jeweler's broach or one of your small enamel chisels to form a mat. To do this hold gold in one hand with the thumb and first finger, then rotate either chisel or broach with other hand until mat is formed. In doing this the mat will not be exactly uniform, but by taking it between the blades of your gold pliers and rotating gold you make a uniform pellet. In placing the pellet there are two ways generally used. The first is to flatten the pellet between the fingers and place in cavity either at lingual or buccal wall, so that the pellet rests on end in cavity, then place second pellet likewise on opposite side of cavity, allowing both pellets to extend beyond cavity margins. Then take a third piece which contains as much gold as both the other pieces using this as a key tc drive the other two pieces close to walls of cavity. First use hand pressure following with the plugger and mallet. The other way is to make three pellets same as before with the exception that they are not flattened. Place one at the buccal and one at the lingual wall, the third making the key; but instead of standing pellets on end, place them so as end of same will come in contact with axial wall of tooth and extend beyond margin at cervix of tooth, condense as before.

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*Read before the Illinois State Dental Society, May, 1908.

Still another way is to make a mat of gold that will be a little larger than the seat of cavity, force same to place gently, allowing the gold to extend beyond cavity margins as the foundation piece, then complete same as the first way mentioned. Be sure to have the gold thoroughly condensed so that its upper surface is a little below the contact point as it is essential to make this contact point of cohesive gold.

Advantages of non-cohesive gold are that it is first more rapid in use at the gingival third of cavity, second that by greater ease of manipulation it lessens the nervous strain on patients and operator, third, its closer adaptation to cavity walls; fourth, greater ease in finishing fillings at cervical margin; fifth, that you are more sure the cavity margins are thoroughly sealed as you drive the entire mass, so that it adapts itself and does not draw away from the margins upon the repeated use of plugger and mallet or bridge over space as does the cohesive bold, which asumes a spring temper by continued impacts of instruments and draws away from margins.

"THE CAST GOLD INLAY."*

BY G. W. DITTMAR, D. D. S., CHICAGO.

Mr. President and Members of the Illinois State Dental Society:

It affords me pleasure to be privileged to present for your consideration a subject which stirs within me a greater degree of enthusiasm than does any other department of operative dentistry, viz.: "The Cast Gold Inlay."

To do this subject justice and treat it in an unabridged manner would take more time and ability than I have at my command.

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*Read before the Illinois State Dental Society, May, 1908.

I can only present certain phases, and therefore it will be my endeavor to show by comparison that for a certain class of cavities the gold inlay is the most ideal filling now at our command.

I will point out where in my judgment its use is especially indicated: The advantages it possesses over other fillings:

Elaborate briefly an outline of the procedure for cavity preparation and give a few suggestions in the technique of making *the cast gold inlay.*

An ideal filling material must possess not less than ten cardinal requisites:

1. It must be indestructible in the oral fluids.
2. It must be a non-irritating substance.
3. It must be easily and perfectly adapted to the walls and margins of a cavity.
4. It must not expand or contract.
5. It must possess resistance to the force of mastication and attrition.
6. It must be a non-absorbent of the oral secretions.
7. It must be a non-conductor of thermal changes.
8. It must possess harmony of color.
9. It must be adhesive.
10. It must be convenient to manipulate.

In my judgment, a good cast gold inlay possesses a greater percentage of these ten important requisites than does any other filling known.

It is indestructible in the oral secretions.

It is less irritating to the pulp than other metallic fillings.

It fits the cavity and its margins are adaptable to the margins of the cavity.

It will not expand or contract as do amalgam or cement.

It has excellent resistance to the force of mastication and attrition.

It is a non-absorbent of the oral secretions.

While not a non-conductor of thermal changes, it is more so than a gold foil or an amalgam filling.

In color it is equal to gold foil and superior to any other filling save porcelain, cement or the so-called enamels which are not permanent in the class of cavities where gold inlays are especially indicated.

While not adhesive in itself, it is set with cement which must not show at the margins, thus the walls of the tooth are cemented to the inlays as well as the inlay cemented to the walls of the cavity.

And last, but by no means least, the convenience of manipulation is very much in favor of the cast gold inlay.

I will not take time here to compare the numerous materials used for filling teeth, but in my judgment, there is not one that compares as well with the standard of an ideal filling as does the cast gold inlay, especially for the class of cavities where it is especially indicated.

INDICATIONS.

Gold inlays are indicated in all large proximo occlusal cavities.

In large occlusal cavities.

In medium to large buccal cavities in molars.

In linguo occlusal cavities.

In fact, I believe that a majority of all cavities found in bicuspids and molars can best be filled with well made cast gold inlays.

Gold inlays are also indicated in incisors and cuspids where for good reasons porcelain will not stand and large gold foil restorations are contra indicated as follows:

Certain types of occlusion and mal-occlusion will not permit porcelain inlays to give the best service, because of the friability of porcelain, in this class of cavities gold inlays are indicated, especially in patients who lack endurance to withstand prolonged operations, because of health or age.

In teeth that have loosened because of some pathological pericemental condition, gold inlays are indicated.

In cases where it is extremely difficult and painful to place a moisture tight dam to protect cavities which extend far beyond the gingival line and should be filled with gold, gold inlays are indicated.

For opening bites or restoring badly abraded teeth, gold inlays are indicated; and in many cases, they form the most esthetic, the most sanitary and strongest possible anchorage for bridge work. Gold inlays are indicated in thousands of teeth that are now being crowned or filled with unsightly amalgam or temporary cements.

While I have by no means cast my gold pluggers in the junk box or discontinued the use of amalgams or cements, or refrained from placing porcelain or gold crowns where I think they are indicated, I certainly do not overtax my patients or myself in building large gold foil restorations in bicuspids or molars, as I did before the advent of the casting process for making gold inlays. Mr. President: I would that I had the ability and time to pay proper tribute to him who gave to our profession this wonderfully simple, beautiful, efficient and labor saving process. Suffice it to say that the name of W. H. Taggart will ever find a place high on the scroll as a benefactor to suffering humanity. I have ever been a defender of gold foil as a filling material and for a certain class of cavities I still stand by it. In most cavities in the anterior teeth where gold is indicated or in pit or fissure cavities in bicuspids and molars, I place gold foil fillings or use platinum and gold in combination, but for practically all large restorations in posterior teeth, cast gold inlays have so many advantages over gold foil or amalgam fillings, that in my judgment, the man who does not use them is not doing the best service for his patients.

Briefly, to name some of these advantages, I will give in part from my discussion of Dr. Gallie's paper of "Gold Fillings vs. Inlays," which was read before this society last year. The advantages possessed by gold inlays over fillings, especially in large restorations are as follows:

1. More certain of restoring the proper contour of the teeth.
2. More certain of producing a proper point of contact.
3. More perfect reproduction of fossae, grooves and cusps.
4. Less thermal conductivity.
5. The adhesiveness of the cement which supports frail walls.
6. No bruised enamel walls due to hard malleting.
7. Saves the patient and makes easier work for the dentist.

CAVITY PREPARATION.

The preparation of cavities for gold inlays is an important feature for successful results.

It involves practically the same procedure as outlined by Dr. G. V. Black for cavity preparation for gold fillings, Though some of the steps are radically modified; they follow one another in about the same order, viz:

1. Establish the outline form.
2. Establish resistance form.
3. Establish retention form.
4. Remove any remaining carious dentine.
5. Establish convenience form.

6. Prepare the cavity's toilet.
7. Bevel the cavo-surface angle.

In establishing the outline form, two objects must be kept in mind: First, extension for prevention, where conditions so indicate, and second, the carrying of the margins to a position and to such an angle that the wax inlay can be drawn from the cavity without any distortion.

In the establishing of this form, taking a proximo occlusal cavity for example, the occlusal portion must be extended to include all pits and fissures, high and weak cusps or walls and so formed as to cause a dove-tailed or locking effect for the inlay.

For resistance form the pulpal and gingival walls should be of as great area as possible and built at right angles to the force of occlusion. The dove tail on the occlusal or where conditions will allow grooves on the buccal and lingual walls from the gingival to the occlusal, without any so-called under cut, must form mechanical retention, preventing any movement of the inlay except occlusally when seated without cement.

If there is any decay remaining remove it or if it is a pulpless tooth, after the root has been properly treated and filled, the walls of the tooth thoroughly clean and dry, place in the cavity enough light colored cement to fill all under cuts and if the case requires it even the major portion of the cavity, shaping in the cement the base and axial walls. The axial walls should converge from four to eight centigrades from the occlusal to the base of the cavity.

In the outlining of the cavity, the walls must be carried to a position to allow of convenient access. If cement has been used as previously indicated, its thorough removal from the gingival margins as well as all the enamel margins is necessary. If the walls of the cavity diverge from the base to the occlusal and are smooth and clean and if the cavity has a form to mechanically lock the inlay in position as far as any direct or lateral force is concerned, we have incorporated in this procedure convenience form and the making of what Dr. Black calls the cavity's toilet. Then the last, yet important step, the beveling of the cavo surface angle or in other words the angle, formed by the cavity and the tooth's outer surface which should be beveled from six to ten centigrades.

In anticipation of arguments against the use of the *Cast Gold Inlay* because of certain physical forces, especially thermal extremes with the attendant expansion and contraction, which it is claimed are not controlled, I would answer, that it is my belief that our chemists and metallurgists will soon devise means to overcome these difficulties in giving us an alloy and investing compound, if we do not already have them. But even now, using the best device and materials at our command and with patient, care taking manipulation results can be obtained, which, from a clinical and practical standpoint, are perfect.

The hair splitting arguments of the ultra scientific may be facts and to an extent have their effect, but many things the scientist believes today, he finds to be wrong tomorrow, and even if they are facts, they may not be of such consequence as to materially impair a practical application.

The casting method for making inlays is the easiest, most perfect and simplest yet devised. There can be no question as to the truth of this statement, on the other hand, *do not misunderstand* and conceive the idea that perfect or even passable results can be obtained without the most careful, detailed and painstaking manipulation. The author of this process, at his clinics and in his writings, has repeatedly said that to get perfect results the most careful manipulation is necessary and that the careless or slovenly operator will make few perfect inlays, but even this inferior class of dentists can make better fillings by this simple process than was possible for them by the old methods.

SUGGESTIONS IN TECHNIC OF MAKING GOLD INLAYS.

The technic in the following brief suggestions I employ, but wish to claim little originality, giving Dr. Taggart full credit: 1. Be certain that the cavity is prepared right. Have no under cuts; no high weak cusps or thin walls, which will have to stand stress of mastication. Then be sure of mechanical lock, to secure the inlay in complex cavities from moving any way but occlusally or incisally. Have cavity walls smooth and margins bevelled.

2. Be certain to get a perfect impression of the cavity in special inlay wax. Heat this wax in hot water, not dry heat. Do not knead or work the wax as you would modeling compound, but take a piece about the size required and with a sharp knife whittle roughly to shape desired, drop in warm water and leave there long enough to soften: The temperature of the water must be such that the wax

will not be overheated, that is, get slippery and brittle, but warm enough to make it plastic, then carry to cavity quickly and with fingers cause pressure to drive it well home, then let patient close teeth to get occlusion, where such is necessary. Now, remove and examine carefully.

Should the impression not be perfect at gingival portion, add a little wax by melting on instrument and adding to the defective part, then drop the wax into hot water again and after it is plastic, reseat in cavity and drive home with pressure, if necessary, repeat this until you have a perfect impression, especially of the margins of the cavity. Now with instruments of proper shape, heated, trim off the excess wax, much of this can be done out of the mouth, but finish in the cavity.

Be very careful that the proper contour and contact is restored that the occlusion is right and that there is a very thin overlap of wax over the tooth margins, the latter can best be accomplished by drawing the wax over the margins with a heated burnisher. In proximal cavities, a thin strip of celluloid or other material used as a matrix, greatly assists in getting good adaptation and contour. After the wax inlay is contoured, carved to the desired shape and finished to just what is wanted, chill it with a stream of cold water before removing it from cavity.

Remove it either by warming the sprue wire and inserting it in the wax inlay, or by inserting some double curved explorer, being very careful not to distort the wax; if removed the latter way, warm and insert the sprue into the wax inlay, having the wire warm enough to melt its way into the wax, so as to make its attachment secure. Place the sprue so that it will not interfere with the fit of the inlay and so that it can be conveniently cut off, after it is reproduced in gold, then close the hole made by the explorer. Now, mount it on the base of the flask or more properly speaking, the crucible former.

The investing must be done very carefully with a special investing material. For beginners I should advise making a so-called double investment, that is, first mix about one teaspoonful of the investing material with cold water enough to make a consistency of very thick cream, then with a small camel's hair brush or small spatula, carefully cover the wax inlay with the investment material, adding more and more until, not only the inlay, but the sprue wire and crucible former are covered; now set to one side for a few minutes and let the investment harden, then place the tube (or balance of flask), on the crucible former, make a new mix of investing material and fill the flask.

The first investment, if it has stood for any length of time, should be thoroughly wet with cold water before the second mix is poured on to it.

Dr. Taggart advocates a single investment and with care it can be successfully done. I will refer you to page 267 of the April number, 1908, of Items of Interest, an article entitled, "Technic of Making Inlays and of Investing and Casting With the Taggart Casting Machine," by its inventor, in which the single investment is beautifully described. After the inlay is invested, dry the investment slowly and carefully, finally getting it hot enough to be sure that the wax is all burned out and the case thoroughly dry.

The button of gold must be absolutely clean and should be large enough to have quite an excess after the inlay is cast. To make the button, fuse the gold on a block of charcoal, not asbestos. If it appears sluggish, sprinkle on it a little flux—equal parts of saltpeter and powdered borax—then throw it into 50 per cent hot hydrochloric acid or full strength hydroflouric acid and thoroughly dissolve all the flux.

Be sure to have the gold button in a thoroughly liquid state in crucible former of flask, before applying pressure. The greater the pressure and the better it is confined, the denser and more perfect will be the casting. The pressure should, however, not be too great as there may be danger of checking the investment.

After casting is made, wash and drop it into 50 per cent hot hydrochloric or 100 per cent hydroflouric acid, see that cavity side of inlay is thoroughly clean and free from any small beads of gold or other irregularities due to possible faulty investment, then cut off the excess of gold and partly finish, but do not grind and polish with the purpose in view of entirely finishing it out of the mouth.

I get the best results where I do the final grinding, and course discing or striping with the inlay well seated in the cavity, before it is cemented. Grind, disc or strip, in a manner to draw the feather edge of gold toward the margin. If it is a proximo occlusal inlay, after it is cut down to what is desired, remove and polish the proximal and gingival portion, then thoroughly clean, wash it with alcohol and dry. Roughen the cavity side of inlay by scratching it with a sharp pointed excavator to insure a better attachment for the cement.

Being certain that the inlay is ready in every detail, thoroughly dry the cavity and line it with cement, place the inlay in position and drive it home quickly, by giving it several sharp taps with a mallet and orange wood stick; quickly burnish the margins well toward the cavo surface, after which, give it several more taps with the stick and mallet.

After the cement has hardened, give the final polish, and if it is a well made inlay, no cement will show, it will be as pretty as any gold filling you have even seen. It will be much denser, will give much less irritation to the tooth and I firmly believe, will give better service than any other filling.

ON THE ABUSE AND INDICATIONS OF PORCELAIN AS A FILLING MATERIAL.*

BY J. F. F. WALTZ, D. D. S., DECATUR, ILLINOIS.

No one can seriously deny porcelain an important position among our filling agents so long as we have absolutely nothing to take its place as a permanent filling where esthetic requirements are nearest satisfied. We have little faith in the durability of silicate cements, however much we might wish it in view of their ease of insertion and improved appearance when compared with most porcelain fillings. Surely porcelain has demonstrated that its use is not due to temporary enthusiasm nor can rightly be called a fad. The conservative dentist never considered it a passing fancy, as is frequently asserted, for its use dates back for more than twenty years, during which time, with gradual improvements in material and application, a record has been made that clearly proves it is a material of much merit when rightly used within its limitations. Were it not for this period of service we would not today have it so near a standard filling agent with definite indicated cavities in which it should be inserted—and in which it should not be inserted—nor would there have sprung up the many appliances and contrivances for the technical part of its use.

Real opposition to porcelain fillings has arisen mainly through incompetence in its manipulation and application. The foremost cause of failure is to be attributed to the fact that it may be used for fillings only as an inlay. With its increased use dentists found their cavity preparation had to be made along more or less unfamiliar lines. So great were the blunders made in this one feature of the new work that much discouragement of the entire method resulted. No operator who lacks appreciation of the requirements of the inlay principle of filling can use porcelain without abusing it and making his work liable to ultimate failure. Dr. Cook in his excellent report of the committee on Dental Science and Literature last year calls attention to the noticeable lack of any uniform or definite methods in cavity formation to be found in all the writings upon the porcelain inlay which his committee examined. The experimental stage with its confusion is rapidly giving way to known conditions with definite methods of procedure throughout all parts of the work. Let no one seek to discourage another until convinced that he personally should bear no blame and that his application of the material was made along approved lines of practice so far as they exist.

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*Read before the Illinois State Dental Society, May, 1908.

Probably the widest abuse of porcelain is made through inappreciation of its most detrimental physical property—its brittleness or friability. It must have considerable bulk to possess sufficient strength and the edges must never be projecting or thin. To use it in the occlusal surfaces of the posterior teeth is now generally conceded to be too hazardous to be countenanced as good practice—neither should it be abused by placing it in exposed positions in mouths where the teeth are massive and show marks of unusually severe force used in mastication. We all recognize these mouths—usually in men—and have been witnesses of failures in gold when the abnormal strain to be borne was not taken into account.

Again we are apt frequently to set a filling which if made another time would be of better color or would fit more perfectly or would be entirely free from some imperfection of baking, as a bubble for example—clearly this is an inexcusable abuse, since in knowing at this stage whether the filling is as it should be or not lies an unique opportunity to approach nearer perfection in the finished work.

Porcelain fillings are indicated wherever we wish to avoid the unsightly appearance of other filling agents and would expect durable service from such a friable substance. Hence we at once appropriate to our field all labial cavities and conspicuously placed buccal cavities.

In these positions it not only prevents disfigurement of the patient but does away with the infliction of the dam and its oftentimes barbarous cervical clamps. In large cavities in these localities is porcelain especially indicated.

Next, in all simple anterior approximal cavities of such size as to be disfigurements when filled with gold, porcelain is most indicated. These can often be entirely filled from the lingual surface, making the work wholly invisible under usual conditions.

Proximo-incisal cavities in the six anterior teeth call for porcelain really the most, as they increase in size. Fillings of any kind to be serviceable in these cavities require care and much ability on the part of the operator. Porcelain is a great aid in this field, where much bulk can be obtained without concern as to the amount of filling showing in the completed operation. Unfavorable occlusion must be taken note of and sound judgment sometimes decrees gold a better agent because of its strength.

Extended labial and buccal abrasions or eroded surfaces are treated very simply with porcelain often when any other agent would apply with difficulty.

In mesial and mesio-occlusal cavities in the bicuspids and molars without an adjacent tooth and without an antagonist we find porcelain the most indicated material.

For incisors and cuspids broken extensively through accident, or badly malformed we have no restoring agent which serves the purpose better than porcelain.

A recent use for porcelain has come in its combination with the cast gold inlay in those cases where considerable gold would be hidden by forming in the wax model a cavity embracing the exposed portion, into which, after the gold has been cast, a low fusing porcelain is baked, making in effect a bit of work similar to the enamel work of the jeweler.

Moldable porcelain finds its application in the posterior teeth, where exact matching of the tooth color is not required and where strength is especially necessary. Its use will be curtailed much, since the cast inlay process has made simpler work of these cavities, but the moldable porcelain still finds indication in cavities where the expense of great bulk of gold would prove undesirable. However, in these cases an alloy may be cast which will contest claims of superiority with the moldable porcelain. The comparatively recent introduction of moldable porcelain with its use largely confined to Chicago practices will afford its advocates here an opportunity to more fully state the indications for its use.

Finally we hope the discussion may do much to bring out clearly the position porcelain possesses alongside the other filling agents considered in this symposium. We should here at this time put ourselves on record through as many members as possible giving their views upon the classes of cavities wherein porcelain is definitely and properly to be used. From general expression of conviction upon this matter much benefit is certain to result and we hope the opportunity will be made use of by everyone present. So strongly should the importance of porcelain as a filling material be urged that no ambitious member can longer defer making use of it in its proper sphere—if he has not previously done so. Neglect to take up this material may have been pardonable some time ago, but at this time we do not see that any practitioner of repute can justify indifference to one of the most valuable filling agents at our command.

COHESIVE GOLD.*

BY L. S. TENNEY, D. D. S., CHICAGO.

Mr. President and Gentlemen:

The question of filling materials is still with us, and I trust ever will be. When this question shall have been finally settled; when we may state with scientific precision and certainty just what material shall be used in each given case and under all conditions, then indeed dentistry will have lost half its charm, and we shall have approached nearer than we ever have the occupation of the mechanic.

Let the question be fairly stated. The question is not, as I understand it, what material is best adapted to certain special cases, or under certain special conditions, or in the hands of certain individual operators; but rather the question is this: What material, taking into consideration all cases, all conditions, and all operators, possesses the most points of excellence and has the widest field of usefulness? I have evidently been laboring under a misapprehension. The fact that this subject has been assigned us is evidence that, in the minds of the committee at least, there is a diversity of opinion. I had supposed otherwise—I had supposed that this was not a debatable question, and that the profession was practically a unit in the position that I maintain, namely: That the material which stands preëminently above all the others, that has nothing to equal or in any manner approach it as a preserver of teeth, is gold—not gold used in the unstable form of soft foil, not gold used in the uncertain and unreliable form of the inlay, but cohesive gold inserted and condensed with plugger and mallet.

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*Read before the Illinois State Dental Society, May, 1908.

Let me say at this point that I am neither an extremist nor a faddist. When I was requested to take part in this symposium it was suggested that I exploit cohesive gold as a filling material, and to deprecate the use of all others. This was to be "an arena for the exhibition of champions.' I cannot take this part. The filling materials we have at our command are all of service to me in my work. I do not see how I could dispense with any one of them and yet serve my patients as they want to be and ought to be served. Amalgam, at times almost discredited by our profession, serves me a most useful purpose. "Gutta-percha, cement, porcelain, all have their place, and it is here that I wish to make the oft repeated statement that the first and highest qualification of the competent dentist is that he shall possess that ready judgment and that wise discrimination which shall enable him to judge rightly of the material best adapted to each individual case that is presented, and it is not intended, therefore, to champion the use of any one material to the exclusion of all others, nor to deny to each material its rightful place in dentistry.

Today we are experimenting with a new method of filling teeth —the cast inlay—and, like all other new methods that from time to time have arisen, we find men taking an extreme position regarding its use. If we are to be guided by a few of our excited confrères whose eyes have become so dazzled by that which is new that they can no longer see that which is old and has stood the severest test of time, then we are to very largely abandon the plugger and mallet, and adopt a method which requires us to destroy tooth structure where it ought to be preserved, cast our gold into an imperfect facsimile of the cavity, and afterward cement it, as best that circumstances will permit and for an altogether indefinite period, into a mutilated tooth.

Gentlemen, with what little influence I may have, I protest against it. With this as with all other new methods that from time to time have arisen, I occupy a conservative ground, nor have I ever yet had occasion to regret having done so. Quite early in my career I found here and there a man whose enthusiasm overstepped the bounds of reason, who acted upon the assumption that whatever was new was right, and that it must of necessity be right because it was new. From time to time I have witnessed the explosion of cherished theories which, in their brief day, occupied almost the entire attention of our profession. Cataphoresis—I dislike to mention its dishonored name; baked porcelain bridge work—it is practically a thing of the past; porcelain inlays—we see our profession gradually receding, discouraged and dismayed; and now when these same gentlemen who advocated most strongly these very methods with which we met humiliating defeat—when these same gentlemen ask me to abandon the use of cohesive gold and to adopt for general use the inlay, in any form whatever, I reply, "No, I shall feel my way, I shall proceed with caution, until time, the only test we may safely apply, shall have proven the superiority of this method."

When we compare cohesive gold with amalgam, with gutta-percha, with tin, with cement, with porcelain, there is no ground for discussion. We are all familiar with their qualities; we know their merits, their deficiencies, their limitations. I do not decry the use of any one of them in its proper place. Each is useful, each is indispensable, and were the question to arise that, were we to abandon the use of all materials save one, which material would we retain, there would indeed arise a problem not easy of solution. But, having all these materials at our command to be used when special cases would seem to indicate, there can be no question that cohesive gold, capable as it is of perfect adaptation, capable as it is of perfect anchorage; gold, unaffected by secretions and possessing all those superior qualities that have made it the great bulwark of operative dentistry, may safely be used in a very much larger number of cases than all other materials combined. Indeed, the superiority of gold is so evident, so well established, so satisfactorily proven by the test of time, that it seems to me this question narrows itself down to a question of the relative merits of cohesive gold as compared with the inlay, the latter being a cement filling in which the excess of cement has been forced out of the cavity by a fairly well fitting mass of metal.

In offering some criticism on the inlay I wish to be understoood as deploring not the judicious use of this method, but its abuse. That the inlay has its place in dentistry no man will dispute; that it has a very great field of usefulness cannot be denied; but it is a fact which, in my opinion, is deplorable and alarming, that we find among our number men who urge, in the most positive manner, the practically universal use of the inlay to the exclusion of all other methods. This tendency has become much marked since the advent of the cast inlay, a method which, according to the manner in which it is used or abused, offers opportunity for the most ideal and at the same time the most reckless dentistry that has ever been practiced in the whole history of our profession. It is a still more deplorable fact that those men who hold such extreme views regarding the use of the inlay are, for the most part, men of influence, men whose opinions carry great weight. We must not forget that now and then there arises a genius for certain kinds of work. Successful as they may be themselves, they are not safe men to follow, and when I see the rapidly growing tendency to abandon the use of the mallet, I deem it my duty, with what little influence I may have, to sound a note of warning to the younger men of our profession, who are more liable to be misled than those of larger experiences.

The position I maintain is this—that cohesive gold, well adapted and well condensed, is, under any and all circumstances, the most perfect filling, and I admit of no exception whatever. I do not mean that there is no place for each of the other materials, but that cohesive gold is superior in all cases when it may be successfully manipulated.

And I further maintain that the only place for the inlay is in those extreme cases of contour and restoration where perfection with any material is all but beyond the reach of human skill, and I accept the inlay here, not as a perfect filling, but as the lesser evil.

I maintain again that while faulty manipulation may, and frequently does, occur in the use of any and all materials, yet the probability of faulty manipulation is far greater with the inlay than with cohesive gold, and that a man with a given degree of skill will have a larger percentage of failures with the former than with the latter.

I take the liberty of quoting from a paper read by Dr. C. E. Woodbury before the G. V. Black Dental Club of St. Paul in February, 1908: "An inlay from the beginning until it is cemented into the cavity is subject to accidents which may or may not be discernible before it is set and the margins finished: A little fault in the burnishing of the matrix, a slight distortion in its withdrawal from the cavity, a slight warping or a little gold on the cavity side of the matrix"; or, in the case of the cast inlay, "A slight distortion of the wax model, either when removing it from the cavity or when attaching it to the sprue wire, a small imperfection in the cavity side of the investment, a failure to cast perfectly sharp at the margins—any of these things may occur and not be noticeable until after the inlay has been set and the margins finished, when it is too late to correct the fault."

While it is not my purpose to maliciously attack any material or method, for, like each of you, I trust I am unprejudiced and am at all times searching for the truth, yet in advocating the use of cohesive gold it becomes my privilege to point out whatever I may regard as faulty in other materials, and I desire at this time to call your attention to what I regard as a very dangerous and many times fatal feature of the cast inlay.

It is a law as well established as that of gravitation and known to all, that metals undergo expansion when heated and a corresponding contraction while cooling. When, therefore, in the making of an inlay the metal is forced into the mold, contraction of the mass inevitably takes place.

For the purpose of satisfying myself what the practical effect of this contraction would be, I have, during the past few months, made a large number of inlays for cavities prepared in blocks of ivory. These fillings were made with every known machine and every known investment, and in each case, where the filling was of considerable size and the gold did not overlap the margins, the contraction was such as to leave a distinct fissure between the mass of metal and one of more of the cavity walls.

I ask you here to consider a very significant fact. When a large mass of metal contracts, such, for instance, as a steel rail, the most marked contraction is in the direction of the greatest diameter of the mass of metal. Applying this fact to the cast inlay, I found that in making a filling for a mesio-occlusal cavity, for instance, there was a marked contraction at either the cervical or the disto-occlusal wall, or both.

Can we compensate for this contraction, and if so, how may it be done? Our inlay friends will tell us that it may be overcome by allowing the gold to slightly overlap the margins and afterwards polishing to a perfect marginal contact. Admitting that this process will entirely compensate for the shrinkage of the metal, or rather, cover over the point of shrinkage, for it does no more than this, a great danger still confronts us, for if in polishing our filling we accidentally or through the necessities of occlusion cut through these thin, atttenuated margins of gold, we at once reach the main mass of metal where the contraction is most evident, and a broad line of cement is left exposed to the disintegrating action of the fluids of the mouth.

In conclusion, my impression of the inlay, either cast or made with a matrix, as far as at present developed, is that in the hands of a thorough and skillful operator, where all details are fully understood and mastered, and infinite care is taken, it may be used to advantage in cavities of very large size; but if put to general and extensive use and made to take the place of cohesive gold, there will result a mass of defective dentistry that will stagger our profession.

They tell us it is a rapid way to fill teeth. I take exception to this statement. In extensive cases, yes; but in all small and medium-sized cavities, and these constitute by far the greater proportion of our fillings, the inlay, properly manipulated, results in a loss of time rather than a gain. They tell us it is an easy way to fill teeth. This, in my opinion, is the poorest of all poor arguments. My experience and observation have led me to believe that in most instances easy dentistry is poor dentistry, and surely no conscientious man would sacrifice good work for any other consideration.

Therefore I contend for the use of cohesive gold as against the plastics because of those superior qualities so well known to us all. It is stable, and its results are accurate and definite. It stays where it is placed. It retains its form. It is not soluble in the oral secretions. And I contend for the use of cohesive gold as opposed to the inlay—first, because the anchorage of the latter is never perfect, and only in cases of complex cavities, where the dovetail may be used, is the anchorage even reasonably safe; second, because it has not yet been demonstrated that cement is a safe material to secure an inlay in place, but rather the evidence is thus far to the contrary; third, because the inlay frequently requires the sacrifice of too much tooth structure as well as the needless display of gold; fourth, because it is a process which from first to last requires a series of the most careful and delicate manipulations, the failure of any one of which results in the failure of the filling; and, fifth, because it offers far more opportunity for defective manipulation than does the filling made of foil.

Gentlemen, let us not be deluded, let us not deceive ourselves, let us not by any means abandon the inlay, but let us proceed with the greatest caution until time and experience have given us a firm foundation upon which to stand, and taught us where, when and under what circumstances it may safely be used.

WHITHER ARE WE DRIFTING?

BY DR. F. S. CASPER, AUSTIN, TEXAS.

For many years it has been the aim of the progressive dentist to hide his patchwork in the mouth. The glittering display of gold fillings and the unsightly amalgam, shining like ebony monuments in the patients' mouths, was incentive enough to cause the esthetic eye of the dentist to renewed efforts to discover a substance with which to construct fillings in decayed teeth which would effectually supersede gold and the baser metals.

To find a substance which could be fused or baked at a low temperature without checking or cracking, and which substance when fused would exactly simulate the tooth structure, both in natural color and density, was the paramount idea, the goal to be reached.

We watched for every evidence of progress in this line of research in the accomplishment of this idea, with an avidity that knew no bounds. We were finally elated when we saw in the dental journals that Dr. N. S. Jenkins of Dresden, Germany, had exclaimed "Eureka." That is to say, the aforesaid skillful operator had discovered a material which would meet all requirements. After careful investigation of the doctor's claims, we were prepared to believe that a new field of work has been opened for the esthetic dentist, and that dentistry was entering upon the threshold of a new era. No more unsightly amalgam patches, or glittering gold mountings in the teeth to deform Nature's beautiful handiwork. We believed that the day of elaborate gold operations would soon be relegated to oblivion. It would be evidence of one's own incapacity to make metal fillings anywhere in the mouth unless in exceptional cases, and when, to be a specialist in porcelain inlay fillings would be a higher claim to fame than was ever the case with a master in the use of gold.

This work was truly a work of genuine art, requiring skill, time and patience. No nervous or unskilled workman could ever succeed in making a perfect inlay of porcelain. Therefore when Dr. Mossback announced his new discovery of an amalgam inlay filling and his method of making it, we were shocked with this retrogressive move on the part of Dr. M. How many disciples the doctor enlisted we are not prepared to state.

Now comes Dr. Jeweler with the perfect "inlay instrument," which bakes the jewelry mountings of enormous size, warranted not to rip, split or tear. Indeed, when I say Dr. Jeweler, it was really meant to be plural. Nearly every mail contains announcements of some crackerjack having patented the ideal casting machine, which costs about 35 cents, which he is willing to sell for $10 and up—some as high as one hundred dollars. Armed with one of these furnaces to melt your gold in, and sling around your head like a baseball pitcher performing his gymnastic gyrations before delivering the ball, the operator, I mean the unskilled operator, is liable to fill the patient's eyes or ears, if she is in waiting, before his imitation of the Highland fling dance is over.

Imagine, if you please, a beautiful young lady, possessed of all the charms that Mother Nature could lavish upon her, with the rose tint of health and the radiant smile of youthful innocence glowing in her beautiful face, with nothing to mar her angelic countenance until she laughs. Then, you will see, not the pearly white teeth with which Nature had endowed her, but the lustre of numerous gold mountings shining in her mouth, giving her the appearance of having just emerged from some jewelry house. And really, that is the sum and substance of her case.

When the World's Fair was under way in Chicago, it seemed that the dental fakirs from all parts had put in their appearance. Whole mouths were literally ruined by the adjustment of gold crowns over living and other teeth—done solely for gain. Never was such an amount of indecent dentistry inflicted on any community. Have they returned to this country to renew their spoilation of the human mouth?

Consistency is a jewel that does not adorn the purpose of the metal inlay operator, or the inception of the inlay idea has been grossly misrepresented in our mind.

AN ANALYSIS OF THE VARIOUS METHODS AND DEVICES USED TO CAST METAL UNDER PRESSURE.

BY C. J. CLARK, D. D. S., CHICAGO.

Probably nothing in the annals of dentistry created such a furor and met with such an enthusiastic reception as the advent of the casting of metal under pressure, the cast to be used as an inlay or other dental artifice. After considering the unlimited possibilities, the unrestricted scope and varied indications for its application, it is not remarkable that it should become the most virile incentive to thought, study and action that has ever agitated the minds of the rank and file of this great and honored profession. Therefore it is not at all surprising that new suggestions should be offered, new theories advanced, and a numberless variety of methods offered for the consideration of the profession. With such a varied array of ideas, it is but a natural sequence that many of them conflict, and the opinions formed concerning them are diversified. What is considered by one individual as the ideal, the acme of perfection, is rejected by another as unworthy and fit only to ornament the junk pile, as a mechanical monstrosity. Thus between the conflicting opinions held by the profession and the extravagant claims of the manufacturers, each purveyor of the numberless machines on the market proclaiming by blatant and bombastic advertisements the one he offers for sale as the best, "the only perfect," "the most simple, requiring no skill," "let your office girl do your work," etc., is it not remarkable that the average dentist stands bewildered and confused, no place to seek the truth, no knowledge concerning this matter, save that which is offered him by those having machines to sell and who are prompted only by pecuniary motives. It is anything but an edifying sight to behold several members of a learned profession gathered around some assumptious salesman and with eyes and mouths open in awe, listen with rapt attention to the sophistical theories he is expounding, and finally fall an easy, gullible victim to his expostulations. With these thoughts in mind, and hoping this contribution might be the means

FIG. I

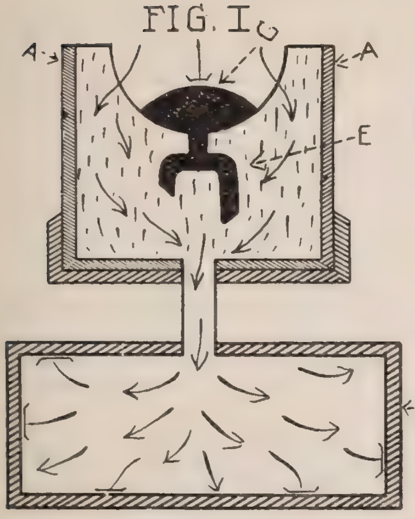

FIG. II

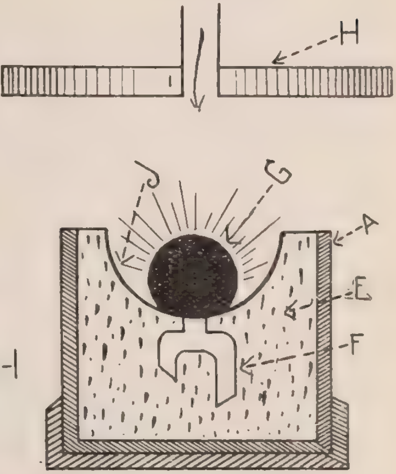

Fig. I. G—Metal. E—Investment. I—Vacuum Chamber.
Fig. II. H—Coverhead. F—Mould. J—Crucible. G—Metal. E—Investment.

FIG. III

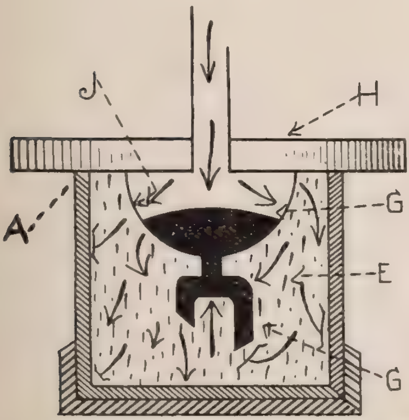

FIG. IV

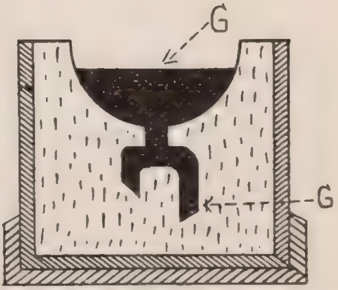

Fig. III. H—Cover. J—Crucible. G—Metal. E—Investment.
Fig. IV. Diagram showing how the metal is flattened when centrifugal force is employed.

of creating a healthy discussion of this most perplexing question, this paper is written.

In order that a casting machine or device be capable of presenting the highest standard of efficiency it must meet a number of requirements, viz.:

(1) A force must be employed that will not chill the metal.

(2) The pressure must be sustained until the molten metal assumes such a state as to preclude all possibility of the metal shrinking.

(3) The pressure must be of sufficient force to conform and hold the molten metal to all surfaces and angles of the mold.

(4) The application of the pressure must be restricted to the area of but one surface of the molten metal, i. e., the pressure must not completely envelop the metal.

(5) The air confined in the gate (sprue hole) and mold must have free egress, so as not to impede the ingress of the molten metal into the mold.

While there are any number of machines of different mechanical construction on the market, they rely on a limited number of forces to furnish the required pressure, viz.:

(1) Compressed gas, the gas being liberated and allowed to exert pressure on the molten metal. (This includes the use of nitrous oxid and compressed air.)

(2) The compression of air, the pressure being exerted on the molten metal immediately as compressed.

(3) The generation of steam.

(4) The application of atmospheric pressure (vacuum).

(5) The application of centrifugal force.

The majority of machines as now constructed with the forces employed, taken in conjunction with the investment material and the flask, are woefully lacking in efficiency and present many glaring defects which are decidedly detrimental factors to perfect results and must exert a deleterious influence on the efficiency of the machine. Indeed, after an analysis of the conditions under which some of them operate, it is surprising that they meet with any degree of success at all.

MACHINES THAT UTILIZE A COMPRESSED GAS.

It is a law of physics that when a gas is compressed, the latent heat that it contains is expressed from it and transformed into potential heat. The inverse of this proposition is also true; an expanding gas absorbs potential heat and transforms it into latent, in proportion to the volume of expansion. Consequently, when a compressed gas is liberated and allowed to expand, it absorbs and acquires heat at the expense of any matter of a higher temperature that it may chance to come in contact with, and so effectively does an expanding gas rob of heat the atmosphere and surrounding objects that it comes in close proximity to, that refrigerating plants are constructed upon this principle, a pump constantly compressing and exhausting air into compartments, the expanding air absorbing heat and reducing the temperature to such a low degree that refrigeration is possible.

When nitrous oxid or compressed air is suddenly liberated and brought in contact with molten metal, the expanding gas must of necessity rob the metal of a quantity of heat and cause it to chill rapidly, which must be conceded to be a decided detriment. It may be claimed that this is but a trifling disadvantage, but the fact still stands an irrefutable truth that, simultaneously, as the expanding gas is exerting its pressure, it is also chilling the metal at the most inopportune time conceivable, the philosophical moment when the metal should be at its maximum state of plasticity.

THE INVESTMENT.

When the wax model is placed upon the sprue and set in position in the holder and surrounded by the flask, and the flask filled with investment, the investment when crystallized is not a solid, impervious mass, but is porous, a reticulate mass, holding the wax model within its meshes.

When the wax model has been obliterated, the mold thus formed is in free communication with the crucible, not alone through the gate but also by means of the myriads of interstices of the reticulated mass, the pores of the investment.

This physical property of the investment allows the pressure that is intended to be exerted on the metal to readily penetrate the investment, as is proven by the facility with which atmospheric pressure penetrates the investment and enters the vacuum chamber during the operation of the vacuum machine.

When a vacuum has been created in vacuum chamber I, Fig. 1, the atmospheric pressure, which is approximately 15 pounds to the square inch, will exert a pressure on all sides of the vacuum chamber, and when a suitable valve is opened which allows communication with the atmosphere, through the interstices of the investment, E, the atmospheric pressure penetrates the investment (as indicated by arrows) and enters the vacuum chamber.

In a machine in which compressed gas is liberated to furnish pressure to drive the molten metal into the mold, when the piston and head, H, Fig. III, is brought down on the flask and the pressure liberated and conducted into the crucible, J, the pressure is not restricted to exert its force on the molten metal, but expands on the surface of the crucible unoccupied by the gold and readily enters the interstices of the reticulated mass of investment, E, and penetrates and ramifies it in every conceivable direction, enveloping the metal in mold, F, and simultaneously exerting pressure on every surface of the metal and from every possible angle, thereby assisting the metal to shrink, instead of preventing this undesirable phenomena, and the only condition that makes it possible to force the metal, G, into mold, F, is owing to the fact that it requires an instant more time for the pressure to penetrate the investment and envelop the metal than it does to force the metal into the mold, the metal when entering the mold encountering less opposition to impede its ingress.

Here again it may be claimed that this defect exerts but an insignificant influence on the condition of the finished product, but if we take into consideration the degree of expansion some metals undergo under the application of terrific heat, it can be readily perceived that there must of necessity be an equal amount of shrinkage when the metal resumes the state it exists in under normal conditions. The only possible way to prevent this shrinkage is to allow the metal to cool under a sustained pressure, restricted to exert its force to but one surface of the metal.

While a sustained pressure is claimed as a feature of some machines, which is very true as far as the pressure being present, but the mere fact of a pressure being maintained does not signify or denote that this pressure has any influence whatever in preventing the metal from shrinking, for as long as the pressure is permitted to penetrate the investment and envelop the metal in the mold and crucible and exert a pressure on every surface and from every direction, under these conditions it is immaterial whether the pressure be one pound or one hundred, or the duration of time it is maintained be one second or one hour. Indeed, it can be readily perceived that the greater the pressure the metal is subjected to under these conditions the greater the facility with which it will shrink. Of course, there are classes of cavities where an inlay is indicated where the question of shrinkage is not an important factor, but cavities are often presented where accuracy is imperative, and where the slightest shrinkage would preclude all possibility of success.

When a molder has rammed a flask and is ready to proceed with the removal of the pattern, the least precaution that he takes is to place suitable vents at the proper location, so as to allow the air and gasses to make their escape freely as molten metal is conducted into the mold.

With the present method of casting metal under pressure this cardinal mechanical principle is entirely ignored, it being erroneously supposed that the air confined in the mold and gate is allowed to escape into the surrounding investment free from any opposition.

When the molten metal in crucible, J, Fig. II, is in a suitable condition to be forced into mold, F, Fig. II, which contains air, and when the metal, G, Fig. III, is driven into mold, F, Fig. III, the air that was contained in the mold must be expelled into the porous investment, where it meets and combats with the pressure of the expanding gas penetrating the investment, used to drive the metal into the mold, and occasionally this pressure impedes the escape of the confined air to such an extent that it prevents the ingress of the metal into the mold, the consequence being a distorted cast, imperfect margins, or even a button of gold, with an exquisitely cast gate, but minus the much desired cast.

The mechanical and physical imperfections which are detrimental factors to successful results in machines employing a compressed gas in conjunction with a porous investment may be summed up as follows, viz.:

(1) The expanding gas chills the metal.

(2) The force employed is not restricted to expend its efforts where they will be the most effective.

(3) No vent for the free expulsion of the confined air.

(4) Only a minimum amount of the pressure expended is utilized, the major portion of pressure being wasted in being applied where it is a positive detriment to the efficiency of the machine.

MACHINES IN WHICH THE PRESSURE IS EXERTED IN THE ACT OF COMPRESSION.

While the objectionable feature of an expanding gas has been eliminated, this class of machines is rendered less effective by the pressure being allowed to penetrate the investment.

MACHINES DEPENDING ON THE GENERATION OF STEAM.

This style of machine has one defect that greatly depreciates its efficiency as an agent to produce pressure, to be utilized in the casting of a metal, where accuracy is a cardinal requirement.

When a wet pad is suddenly brought down upon a heated flask, and over the glowing metal, steam is generated, a sudden spasmodic pressure developed, but only for the instant, for as soon as the maximum heat has subsided the pressure immediately diminishes, and as this occurs a vacuum is formed and the pressure on the molten metal is nil.

In order to fully appreciate the degree of vacuum condensing steam will develop, if an ordinary bottle be taken and a quantity of steam exhausted therein, and the palm of the hand be placed over the mouth, the idea I wish to convey will be effectively demonstrated.

The objection of a porous investment is also applicable to steam.

MACHINES WHICH UTILIZE ATMOSPHERIC PRESSURE (VACUUM).

The vacuum machine, with a few improvements would be an ideal one for the purpose for which it is intended, for it presents two decided advantages over the machines heretofore mentioned, viz.:

(1) The metal is not chilled by an expanding gas, but to the contrary, heat can be applied until the mold is completely filled.

(2) The confined air in mold F (Fig. I) is drawn into the vacuum chamber before the metal is forced into the mold.

In this class of machines the objection of a porous investment is again presented, but this defect is greatly mitigated by the fact that while the pressure does penetrate the investment it is constantly in transit during the critical period of the operation, passing through the investment (as indicated by the arrows, Fig. I) into the vacuum chamber I, until equilibrium is established between the pressure in the vacuum chamber and the atmosphere. While this condition happily prevents the pressure from enveloping the metal and compressing it from all directions, the major portion of the pressure developed and applied is not utilized, but is permitted to pass directly through the investment, without coming in contact with and exerting pressure on the metal, and the small percentage that is utilized, after exerting force on the metal is deflected from side to side and passes into the vacuum chamber. Therefore the metal is not driven by an unyielding and undiverted force, i. e., by displacement, but is propelled into the mold by the velocity of the air passing through the investment into the vacuum chamber. While this force, with the aid of gravitation, suffices to drive the metal into the mold and to conform it to all surfaces and angles, it is doubtful if it is of sufficient strength to restrain the metal from shrinking.

CENTRIFUGAL FORCE.

Those who are not acquainted with the possibilities of this force are prone to hold it altogether too cheaply, and make too light an estimate of its effectiveness, but when we stop to reflect and the thought is brought to our minds that the power of this mighty force was utilized by the Creator to place the planets in the heavens and arrange the solar systems of the universe, we must comprehend something of its strength. The writer once witnessed the bursting of a large emery wheel, and the havoc and damage executed in a fraction of a second gave a practical demonstration that he never again desires to behold.

The employment of this force in the casting of metals, to be used as dental artifices in conjunction with the flask as now constructed, and a porous investment, is an ideal one. The advantages are, viz.:

(1) No expanding gas to chill the molten metal.

(2) No pressure penetrating the investment, enveloping the metal and assisting it to shrink.

(3) The air confined in the mold and gate is allowed to escape into the surrounding investment, unhampered by any opposing force.

(4) It requires no expensive and complicated machine or apparatus.

As the flask is revolved the heat maddened molecules are driven, pushed, squeezed and piled one upon another with ample force, restricted in its application to one surface of the metal and exerting its pressure in the proper direction. This pressure may be maintained as long as desired by the operator and thereby prevent any possibility of the metal shrinking.

When a consideration is made of the amount of force applied in other machines, and the extreme fluidicity of the metal, it should be with reason expected that the molten metal must of necessity be pressed out flat on the floor of the crucible, and would if the metal was not chilled by an expanding gas, and the pressure permitted to penetrate the investment and envelop the molten metal. If a close examination is made of the excess metal remaining in the crucible after a cast has been made, it will be found that the upper surface of the metal is convex in form and near the center a slight depression can be detected. The convex shape of the excess metal is strong proof that the pressure has been misapplied, and the depression denotes that the metal has been allowed to shrink *ad lib.*

It has been erroneously supposed that the depression in the center of the excess metal in the crucible is caused by the intact of the expanding gas, but this could be hardly possible, for the pressure on entering the crucible instantly expands with an inconceivable rapidity and exerts pressure in every direction. The pressure is not emitted into the crucible as a stream of water from a nozzle and in only one direction.

If the excess metal in the crucible be examined after a cast has been made by the application of centrifugal force, it will be found that the excess metal has been driven to the floor and flattened out absolutely level, with no depression in its center, which is positive evidence that the necessary force has been properly applied and the metal has been conformed and held to all surfaces and angles of the mold, and that no shrinkage has been permitted to occur.

IS OUR CODE OF ETHICS OUT OF DATE?*

BY CHARLES A. CHENEY, D. D. S., FOND DU LAC, WIS.

"All's fair in love and war and business." The old proverb which we all know so well might thus be changed to apply to our modern life, and how many business men could be found who believe it!

We have read much of late regarding the practices of the Standard Oil Company, how they accepted secret rebates, lowered the price of crude oil in certain districts and by one means or another put the small producer out of business. We see our large coal carrying roads discriminating between mines and by unfair means obliging the small mine owner to sell out to protect himself. A large portion of the business world either looks upon these practices as legitimate or feels that there is no remedy. The motto seems to be: "Your competitor is your enemy and the public is your prey, therefore get rid of the one and gouge the other regardless of the consequences."

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*Read before the Fox River Valley Dental Society.

If this is the modern method which makes successful business men why should the dentist be bound down by a set of rules, which a few men have formulated for him? Isn't he a full-fledged professional man, with a license from his state which allows him to practice his profession?

Can the individual dentist make as much progress when bound down to the code of ethics, or would it be better for patient and dentist if the code were blotted out?

Let us look at the first article of the code, treating as it does of "the duties of the profession to their patients." Is the public liable to think us out of date because we are kind and sympathetic to our patients or yet because we spend much time in explaining the whys and wherefores of different operations?

The spread of dental knowledge during the last twenty-five years has been accomplished largely by the conscientious dentist, but with all this labor, think how little the average person now knows about the dental organs. Here, I believe, is a portion of the code which should be emphasized, that our mission is not alone to prevent suffering and thus earn a livelihood, but we must be teachers as well. To be sure some patients pay no attention to suggestions or information given, and we may feel it time wasted to try to impart necessary knowledge. A large proportion of our patients, however, are receptive and are willing to absorb a certain amount of useful information.

Do not talk to them in uncertain terms or high sounding phrases, as you would in a lecture before a body of dentists, but in the simple language that any one of intelligence can understand.

Nor is it the proper thing to brag about the work you can do or give your patient the idea that you are the sole possessor of some marvelous method known only to yourself, when in reality there may be a half dozen others who can do the same work equally as well, or perhaps even better, than you can.

If the patient comes for treatment of an abscessed tooth, explain in a few words the cause and the method of treatment; if a case of pyorrhea presents itself, give the different theories as to cause, whether the case will respond readily to treatment or whether it has gone so far as to be hopeless. If a filling be necessary for a certain tooth, tell what one is best and the reason why.

You have the experience and can advise as to what is best and at the end of the operation your patient has acquired a further knowledge of his or her dental organs.

Many of our patients are just beginning to realize the possibilities of dentistry. Some there are who still think that to extract a tooth and insert a filling is all that is required of a dentist. It is up to the members of the profession to dispel this illusion. The section of the code relating to advertising, however, seems to be the one which is questioned by many business, and some professional men. Never in the history of the world has so much time, space and money been devoted to advertising.

We see many lines of business which are built up and which continue to prosper by a liberal use of printer's ink.

The successful advertiser or the one who has advertising space to sell oftentimes can not understand why the dentist should not double or quadruple his business by the use of advertising. I remember one man who came to me with a proposition to put my name and ad, along with the butcher, the baker and the candlestick maker, on 10,000 paper bags to be used by a certain grocer for his tea, coffee, sugar, etc. Think what a fine class of patients would come from such advertising. Of course this idea is ludicrous and would appeal to but very few, but the advertising on a hotel register or ink stand is just as absurd when you stop to think of it. It is human nature to ask the hotel clerk where a good dentist could be found, and in ninety-nine cases out of one hundred the name of the good dentist mentioned will not be the one on the register. What shall we do though, when one of our best patients comes around with a church cook book or a county fair premium list, with space to sell, saying we are going to have a page of dentists, a page of physicians, etc.?

In either case it is a very simple matter to state that the dental code of ethics prohibits advertising of that class. If it is for a church and you wish to give something for the cause, do so, because the object is worthy and not because you need the advertising. If for a county fair, it is simply a business proposition. There is no reason why you should take the space if you do not care to advertise. If you treat them the same as every other advertising proposition they can not feel badly toward you.

Let all the dentists in a community stand together, and it would be taken as a matter of course.

The American people are a bargain loving and a bargain hunting race, and there will always be a few who are looking for the sign, "Gold crowns, $2.98," or for one reading, "Appendices removed by our new rotary de appendixer, $9.00 per dozen."

Do you want that class of patients? If you do, then advertise, and you *may* be able to make lots of money on crowns at $2.98, until your competitor cuts to $2.97, when you must use a bigger ad and make another cut in price, and business will prosper for a short time again.

The large majority of the American people, however, are getting wise to the fact that the $5.00 crown is not the $8.00 kind cut to that price, but instead it is a $3.00 one marked up.

Ask almost any advertiser who has tried the game and you will get the answer that there is nothing in it. One man I know of who stopped advertising in a certain newspaper two years ago is still paying on account at the rate of $2.00 or $3.00 a month.

Shall we revise this section of the code so that all may advertise? I say no, for two reasons; first, because it is not the proper thing, and second, because it does not pay.

Another section of the code relates to the fee bill adopted by any city or locality.

In agreeing to a fee bill, do we form a combination in restraint of trade? If our fees are fair and reasonable are we a dental trust? In my own home city, where we have a fee bill, we often hear the statement that we belong to the union.

Uniformity of fees I believe to be a good thing, if for no other reason than that it does away to a large extent with the dental shopper, a species of the genus homo which seems to thrive in our smaller towns and cities.

They soon come to know about the uniform fee bill, and thus save themeselves and every dentist in the community much valuable time.

Even though we have a fee bill the genius is not quite extinct and occasionally one drops in to inquire the price of some dental necessity. As they depart, however, saying they will come back tomorrow, we feel that the bargain they are pursuing is only a will-o'-the-wisp not to be found in a dental office.

If in order to get the business a dentist makes a lower fee he is the one who suffers most, for he practically admits to his patient that he is not so good a dentist as those who command a higher fee.

One dentist I heard of where they had a uniform fee bill made out the patient's bill according to the fee bill and then discounted it a number of dollars, depending on the size of the bill.

That dentist was only sowing the seeds of low prices for the future, for it is a very easy thing to lower prices, but very difficult to climb back again to a proper fee.

When consulted by the patient of another dentist, how easy it is to say a good word for him. His work may not be perfect, but just remember that yours is not always what you would wish it to be.

The idea that your competitors are your friends makes the practice of dentistry worth while.

Our work is a severe enough tax on a man, without having the worry that our competitors are doing all in their power to put us in a bad light before the community.

The fourth article of our code concerning the relative duties of physicians and dentists I feel is working out very well. Our present day professional men have a broader knowledge and thus realize their limitations. In this way they work together if necessary or they refer the case to the profession best prepared to handle it.

In going over the code of ethics I have not tried to take each article and each section and analyze them minutely, but only those portions which might be considered by some as inoperative or out of date.

We have in Washington a man with a big stick and a smile like a Sozodont ad, who has given us the motto, "A square deal to every man." That, it seems to me, is our code of ethics in a nutshell.

Square with ourselves, square with our professional brother, and square with our patients.

Is our code of ethics too near the ideal and impossible for the dentist to live up to?

If it is, then let it be revised. If not, let each one strive to do what he can to make it a living thing.

Nearly 2,000 years ago a code of ethics was given to the whole people. It has come done through the centuries and is known to us as the Golden Rule. Like the dental code, there are those who do not believe it possible in the twentieth century. And yet, as with the dental code, there are thousands who are striving toward the ideal and not falling far short of the mark. It would be impossible to prove this rule out of date, for many have seen the results which follow its observance. So it is with the dentists who have lived and worked under the code of ethics, the universal sentiment is that it is not out of date.

Have you read it over lately?

If not, get a copy and read it over. If you cannot agree to every portion of it, a little missionary work needs to be done in your case, for it may be you and not the code of ethics which is out of date. "To every man a square deal" is the spirit of our code. The wording of it may change as time goes on, but the idea will always be up to date. Long live the code of ethics of the National Dental Association.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FOURTH ANNUAL MEETING, SPRINGFIELD, MAY 12 TO 15, 1908.

DISCUSSION OF THE SYMPOSIUM ON THE USE AND ABUSE OF FILLING MATERIALS.

Dr. E. K. Blair of Waverly:

I have had some experience with what I think were pretty well set inlays that I have used as abutments in short bridges. I have been wondering how much mobility there is in teeth, and I am trying to determine how long this little cement behind the gold inlay will withstand the mobility, where the bridges are subjected to the ordinary service required of them. I have had one loosen, one that I had been using as an exhibition case, speaking in the common parlance of the day. I had shown that short bridge with the inlay abutment and felt proud of it. Recently the patient came to me and said this bridge had been troubling her for three or four weeks. After I removed and examined it, I found some decay. I told her I would reset it temporarily. She has more cement behind that inlay now than when she went out of the office with it the first time. This is annoying and leads one to wonder what may be the condition of other short bridges anchored with large inlay abutments.

All of the papers presented have possessed merit and will rank high when compared with papers heretofore read and I congratulate the members of this society upon the very excellent work of those who have contributed to this symposium.

No subject is more interesting to me than that of cohesive gold. As a filling material it will always occupy the foremost position. In a number of cavities of moderate size where the element of prompt service is to be considered nothing equals it. In addition to avoiding the cement joint, much tooth structure may be saved that would be sacrificed shaping the cavity for an inlay and a splendid gold filling can be made in less time than the average inlay. Until we can look with more confidence upon the cements, carefully made gold fillings will command our attention and occupy a large place in the year's work.

Dr. A. G. Smith of Peoria:

I have been much interested in the paper of Dr. Tenney, as when he took the platform I regarded him as a man leading a forlorn hope, but it turned out that neither he nor the hope looked as forlorn as at first. He quoted Dr. Woodbury. It was my privilege to put up ten dollars to see Dr. Woodbury perform, for which I have no regret, for he illustrated most perfectly one of the fine points of a large proximo-occlusal cavity in a bicuspid. Dr. Woodbury put in his filling with non-cohesive gold base, G. V. Black's preparation, cavo-surface angle—in fact, everything provided in the constitution and by-laws (laughter), and finished as beautiful a filling as I ever saw in my life. He placed this filling in an upper bicuspid. It was a cavity in a perfectly formed live tooth— a very small cavity, or, at least, not a large one to begin with. He cut it out, all to self-cleaning, margins, cut clear through the fissure, made his step a little better than a right angle, and all that, and he finished up this beautiful filling, but the pathetic part of it was this, that just as he gave the final swipe around the proximal surface he swiped the whole lingual cusp under the patient's tongue. If that had occurred in my practice, it would have been bad. I would like to have it last until the patient got downstairs. (Laughter.) I asked Dr. Woodbury the question, Has that ever happened before? He said, "Yes, that happened to me before and to Dr. Conzet." He was an honest man, and I would put a great big credit mark on that man. I went home, and the organ that answers the purpose of a brain with me was working. They cannot tell how much resistance of the dentin was taken up in holding the filling that was there, nor how little there was left of it to do business on beef-steak. They cannot tell us how many cusps have split in actual use. If I should split off the whole lingual cusp, when there was only one small cavity in the tooth I should consider that I had done that patient an irreparable injury, and that is one thing that the inlay absolutely gets around. You do not take up any strength of your tooth in holding the filling material in position.

I took up the cast gold inlay as the veriest skeptic. The first thing I did was to have one put in my own tooth; the next thing I had to have another one put in. I have been waiting for twenty years to have something come along which was the proper thing to put in that tooth, the first one I had filled. Twenty-five years ago I had a gold crown put on. I have not got it now. It is gone, so is the tooth. The next thing I did after I got these two inlays in my own mouth was to take out two large cohesive gold fillings in my wife's teeth and put cast gold inlays in them. That is all the sense I had. (Laughter.) History tells us that when Harvey discovered the circulation of the blood there was not a physician alive at that time over sixty years of age who did not fight the theory of the circulation of the blood and fight it up to the day of Harvey's death. But I am not sixty years of age. We have got to go ahead. We can not stop here. Whitman says that "no matter how pleasant this harbor, we can only anchor here for a little while." I have taken up the use of porcelain, have gone down in sack cloth and ashes for failures in porcelain work, yet every failure would not turn me back in the cases where I think it is indicated. I confess my failures to my patients; I don't know any better. I try to avoid making them again, and I have not made so many of them that the sheriff is going to foreclose on me before I get back. (Laughter.)

Dr. C. N. Johnson, of Chicago:

Tonight we have heard the most brilliant lot of papers it has ever been my pleasure to listen to. Every paper read was a classic, and every one was absolutely correct. It is only an indication of the fundamental fact in this whole question, that each one of these filling materials and inlays is indicated in its given place. We cannot practice dentistry successfully unless we use every method that has been advocated here tonight. Some one has said that the best practitioner was one who had the widest range of ability and had the discrimination to use that ability in each given case. That is a fundamental fact. Enthusiasm makes our profession move, and it is well that men become enthusiastic about certain methods, because by virtue of this enthusiasm they develop methods better and to a higher degree of perfection than ever could be attained by the rank and file. The man who practices the best for his patients will study the point of view of enthusiasts in each department, and then be sane enough to discount some of what the enthusiast says, because that is conservative dental practice.

Dr. Hart J. Goslee of Chicago:

The question which presents itself tonight for consideration is mainly as to the general usefulness, the practicability and general application of the inlay method. I want to go on record as saying that I should hate very much to go back to the practice of dentistry as it was prior to the advent of the inlay method; at the same time, I am conservative enough to say I shall not consider placing it everywhere, for, as Dr. Johnson said, the success of it will depend upon discriminating judgment in its application.

I was pleased with Dr. Rohland's paper because he said so many good things in it. In his closing words he said that plastics are king at present. I recall that because the late Dr. J. Foster Flagg predicted twenty years ago that plastics would be king, and the advent and the successful application of inlay work at the present time prove that plastics are still king, because so long as we have to rely on cement as a retaining medium of our inlays, and so long as it is possible to have an adaptation which protects and preserves cement, we will practically have it as a medium of preservation.

Dr. Waltz in discussing the question of porcelain inlays said that they were indispensable if judiciously employed. There is no question of it. Those who have had failures in porcelain work can attribute a large proportion of the failures to injudicious application, to faulty cavity preparation, or to faulty porcelain manipulation. My employment of porcelain work is confined exclusively to the filling of medium to good sized cavities in the six or eight anterior teeth, where patients demand the avoidance of a conspicuous display of gold, and it will always be indicated in this class of cases.

We come now to the question of gold inlays and their relative merit as tooth preservers as compared to the cohesive filling. You know I was almost enthralled when I listened to that splendid effort of my good friend Tenney, and I am very glad he had the courage to get up here to say what he did, because I believe it is a good thing to have a restraining influence held over us at times.

But I want to take issue with him on the five reasons which he gave for preferring cohesive gold fillings to gold inlays. He said: "I contend for the use of cohesive gold because of those qualities well-known to us all, and because its results are accurate and definite, as opposed to the inlay, first, because the anchorage of the latter is never perfect, and only in cases of complex cavities where dovetailed anchorage may be used is the anchorage reasonably safe." Well, I am free to admit that only in cavities where the dovetailed type of anchorage may be made is any type of inlay successful or is it safely anchored. Since the first of my experience in inlay work I was just mechanic enough instinctively to know that we could not depend entirely upon the adhesive properties of any of our cements for a retaining medium, and therefore I resorted to the dovetailed form of cavity preparation in all instances where it was possible. I regard it as absolutely necessary, it is also possible in almost any type of cavity where an inlay is indicated, so that I must take issue with him there because he admits he does not rely upon dovetailed anchorage for his inlay fillings, and if he does not, they will be failures.

He says, second, "Because it has not yet been demonstrated that cement is safe to secure an inlay in its place." In a measure that is true. Of course it has not yet been fully demonstrated that cement is adequate to the demands of permanent retention. But many of us present here tonight have seen inlays made by Dr. Ames which have been in the mouth from ten to twenty years under conditions very much different from those under which we labor at the present time, and still preserving the teeth and doing good service. I have seen these fillings, and porcelain inlays that were put in by Dr. Jenkins of Dresden twelve to fifteen years ago, sustained with cements which we had in use in those days and which are still doing good service.

I firmly believe that if the adaptation of our filling to the cavity margins is sufficiently accurate as not to leave an exposed margin of cement, our anchorage is adequate. In other words, the means of fixation in the attachment of our inlay to the tooth is adequate to the requirements.

Third, he says: "Because the inlay requires a sacrifice of too much tooth structure and the needless display of gold." I do not believe it is very often necessary to sacrifice any great amount of tooth structure, but we would have to sacrifice a certain amount for the insertion of a well-adapted cohesive gold filling. There may be same extreme cases where we feel it necessary to cut tooth structure away a good deal more for an inlay in order to get a dovetail anchorage than is necessary for the insertion of a non-cohesive gold filling, but they are the extreme cases, and not the typical ones.

He says, fourth: "Because it is a process which requires from first to last a series of most careful and delicate manipulations." It is true, the insertion of a well-made, accurately adapted gold inlay, does require a series of careful and delicate manipulations, and for that reason the procedure is not always successful. But can you, ladies and gentlemen, tell me anything in the practice of dentistry that requires much more careful manipulation to bring about accurate results than the insertion of a cohesive gold filling? I want to say this in that connection: If we devote the same amount of painstaking care and energy to the building of an inlay that we would to the building of a cohesive gold filling, we will have as perfect a result as it is possible to secure.

The other point I want to make is that very often this method of using cast gold inlays has been referred to as a simple and easy method of filling teeth. Dr. Tenney referred to it in that light. I do not think the father of the method has ever said or would acknowledge now that he regards it as a simple method of filling teeth. It requires every degree of skill and just as delicate and painstaking manipulation to insert a good cast gold inlay as it does to insert any other type of filling we put in. I know of nothing which requires more painstaking effort from the beginning to the end than the building of an accurately adapted gold inlay. Just one word more.

Knowing that Dr. Tenney was going to have something to say with regard to the possibilities of effecting adaptation in the construction of cast gold inlays, I went to Dr. Johnson's assistant in that department at the College, who has had some beautiful work done by students during the present course, and asked him to select some fifteen or twenty bone models which he has had the boys make during the winter and filled with cast inlays, some with gold, some with silver, and I brought these here to show Dr. Tenney and all of you the possibilities of effecting adaptation even in bone teeth by students at the college. I am quite sure, if he has not seen that class of work, it will be a revelation to him.

Just one other thought in reference to the shrinkage of metals. Dr. Tenny is undoubtedly approaching a very important phase of the subject when he questions the possibility of getting a gold casting perfect, that is, never giving a possible change of form under shrinkage. That must be proved more scientifically than he has done it in his paper. His experiments which he carried on must have been affected more or less by the temperature and moisture of the room. If he had cavities cut in steel dies and filled them and used perfectly stable investment materials, then it would have been scientific, and unless it is along that line his deductions do not prove anything.

Dr. George W. Haskins of Chicago:

I would like to say a few words on this subject. It seems that no one has a good word to say for two old friends, amalgam and non-cohesive gold. Today, I believe, that if we had the records to refer to, amalgam would be found far superior as a tooth-saver to any other material that has been used for that purpose; it has saved so many teeth because it has been used so many times and used in such large quantities. I used to say to my patients early in my practice: "If you have twenty dollars to spend you can save more of your teeth by the use of amalgam, you will get more fillings for the money that will give you good service, than if the gold fillings were put in." Let us take an approximal cavity in a bicuspid in which, in many instances, there extends a white line of decay quite a distance beyond this area (illustrating on blackboard). Sometimes it is limited to this small area (indicating), but frequently it extends beyond, and to prepare that cavity properly for an inlay you have to cut the crown of that tooth well towards the middle of the labial and lingual surface in order to get a possible drawing shape for inlays. This heroic cutting is not necessary except for an inlay, and I want to go on record as saying that there is just one material that is proper to use in that form of cavity to save that tooth, and that is non-cohesive gold. I believe it. I have used it all through my practice, and it has proven its worth when properly used, and it is not difficult to use.

You can fill such a cavity better, quicker and give the patient better service, save more tooth substance, have less display of gold, and have less liability of the lingual wall breaking away, by using non-cohesive gold than by any other method. One could read a volume as large as Dr. Black's new book, and after reading it he would not know much more about it, if he had not tried it, than when he started. There is but one way to learn it, and that is to fill teeth out of the mouth, and after you have mastered the technic of it you have got something that will be of value to you in your practice. As I have previously said, not a good word was said about non-cohesive foil except by the essayist, but it is one of the best, one of the surest materials at our command.

Dr. J. N. Crouse of Chicago:

I was glad to hear the last speaker make a plea for the use of non-cohesive gold. I have been an advocate of cohesive gold, but, at the same time, an advocate of non-cohesive gold in that same connection. I can show you fillings put in forty years ago that are standing yet and are in good condition with non-cohesive and cohesive gold combined, lining the cervical margins with non-cohesive gold and driving the cohesive gold into that. I never pack cohesive gold against the free margin; I put non-cohesive gold there as a protection, and I challenge any man to advance a better or more successful method than I have adopted. Therefore, Dr. Tenney's proposition is incorrect in that he does not use non-cohesive gold in that same connection. I think he condemned it in his paper, and said he did not want sloppy non-cohesive gold at the margins, or words to that effect. That is where it ought to be. I have pounded gold into teeth for five hours at a time in putting in fillings, and have taken about two hours to finish a filling. I am an enthusiast in this day over the cast gold filling, because I can make a good filling, a durable filling, considering all conditions, in cases where amalgam would be used and fail, where no other thing, unless cutting the tooth down and putting a crown on it, would answer. That is all you can do with the casting process. I have never taken much stock in porcelain inlays except in peculiar cases. If any of you will go back and look over the operations in which cohesive gold was used, No. 60 and No. 120 gold, and examine the number of cases where the enamel was chipped with the driving and packing of the gold, as we did it then in a crazy way, they would not advocate any such thing as that now.

With reference to Dr. Rohland's remarks concerning the use of oxychloride of zinc, I have not filled the root of a tooth or a pulp canal with anything but oxychloride of zinc for forty years. I have had two assistants in my office covering a period of twenty-five years, and yet neither one of them has ever seen an abscessed tooth in my office where I had filled the roots with oxychloride of zinc. That is my record. I do not recall a failure with that method of filling. I take a staple broach and put two layers of No. 10 gold foil around it, a very short roll of it, and fix it so that it will stay there and the broach will come away when the gold is applied. I fill the root or canal with the oxychloride of zinc, carefully push the broach with the gold on the end of it into the cavity, and slip the boach away. I feel the cement has not been drawn away from the place where I want it, and when I hear practitioners generally say they fill canals with chloro percha and gutta percha points I think it is an abominable practice. When you take out such fillings the odor from them is very offensive.

As to amalgam and cement under amalgam, I would like very much to examine those fillings where the cement has been put under the amalgam where moisture could not get to it. That cement underneath the amalgam, treated in that way, would be a worthless piece of material, because all the oxyphosphate cements must have moisture to have perfect setting and have them useful. They are submarine. Of course, we can not get at the patients and take the fillings out to see how the cement looks in there, but I would question the advisability of using oxyphosphate cement in a tooth without letting any moisture get to it. Where you make inlays you have got your margins. I would like to know, from a scientific standpoint, what the condition of that cement is under the filling where no moisture has ever gotten to it.

Dr. Rohland:

Would there not be moisture above the tooth itself?

Dr. Crouse:

Perhaps there would be, but I hardly think so. If you were to dry a tooth as you would with hot air and the cement stuck well to the wall there might not be much moisture on there after that.

I want to make a plea for the casting process as a means of setting crowns. I can take Taggart's green wax, put a pin in a central incisor, cut a piece of the proper size, get it warm, crowd it up there, and make as beautiful a band as a crown should have. It protects the end of the root, and it is a most excellent way to set a crown. I would recommend this method for setting crowns in preference to cutting the root down to shape, fitting the band, and driving the band up under the gums, thus raising the devil. (Laughter.)

A MEMBER:

Do you cast your gold into the porcelain?

DR. CROUSE:

Yes, sir. You may have to make your investment hot before you force gold in there. It is a splendid way to set crowns. I showed Dr. Taggart a rough model of a bridge I made for a patient. I have done work for this patient for forty years. I have renewed two gold fillings on the grinding surfaces of two lower molars, a third molar, and first molar. The second molar is gone. The second bicuspid is gone. I made a bridge, using Taggart's wax, getting it the right temperature, I took an impression with it, after shaping the cavity. There is a tendency to pyorrhea in this case. But I used the casting method and have secured a nicely fitting bridge which fills all the requirements. The man is now able to chew his food well, which he could not do in forty years as well as he does today, and he said: "Why did you not do this long ago?"

DR. J. G. REID of Chicago:

If I had to go back to practice dentistry as I did ten years ago, or prior to the time of the cast inlay method, I think I should go to Idaho right away and go farming. Since the introduction of the inlay method, both as regards porcelain and metallic inlays, together with proper cavity preparation developed since that time, I believe much better dentistry has been done by this method of filling teeth. I think it requires special skill in the preparation of cavities where we use inlays. Dr. Goslee has called our attention to the fact that there is shrinkage in the metals. This is true, but I believe I have discovered this one thing in that particular—and perhaps some others have observed the same—that where I have invested my wax and have left the investment lying around my office for twenty-four hours and then cast the inlay, it did not fit so well. That is not, in my opinion, the fault of the metal; it is not the shrinkage of the metal that has caused that ditch. (If Dr. Tenney's eye has discovered a ditch, then his eyesight is pretty good.) But I do not believe it is the fault of the shrinkage of the metal at all, but it has been the fault of the investment material. If you want to get the best results in the fitting of a metallic inlay by casting, I should say get the investment over the flame as soon as hard and get the inlay out of the investment as quickly as possible.

Dr. Taggart told you today in his little talk that there is great room for all of us to do some investigation, and there are improvements to be made all along the line. That is one of the improvements. Dr. Perry, Dr. Roach and myself have been doing some thinking along these lines, and we have all discovered the fact I have mentioned, and have come to the conclusion that it is not the fault of the metal, but the fault of the investment material.

Dr. William H. Taggart of Chicago:

I think the time has come for us to talk more along the scientific side of this cast inlay problem. I feel as if the conditions under which these gold inlays are cast are different from those in which gold was ever put before. In other words, if you take a piece of gold and melt it in the oven, and allow it to cool, it will have a certain specific gravity. I had these tests made for me by a man of ability. The button I took was 1000 fine Williams' gold, and the specific gravity of that was 19.16. I told the scientist to whom I took specimens about the conditions that were prevailing, the fact of the casting of gold under pressure, and I think there must be some influence, on account of the accuracy of the fits I obtained, that this pressure had on the gold in its molten condition that did not exist in gold when cast by gravity alone. He said it was taught in the books that the ultimate density of gold would never be any greater than the specific gravity of that gold as it was melted in the oven, unless you hit it with a sledge hammer. He combatted the idea I presented to him, that there would be any further density in gold as I cast it.

I will first make a drawing on the board of what this man did for me, or, rather, what I furnished him, and what he did. (Illustrating on the blackboard.) This was the first pellet of gold melted in the oven. I bought a piece of pure gold that weighed ten pennyweights. It was an inch and a half wide, and so many inches long. I folded it on itself, cut it in two, folded it again, and cut it again, so that I got equal parts of that gold where there might be some variation in the specific gravity. This man told me that he had tested several lots of gold and finds that a large button has a specific gravity of 19.16. With irregular casting the specific gravity jumps up to 19.45. Then we cut this off here (indicating), and took the specific gravity of the remaining part, or what you would call the excess of gold, the point at which there would be most shrinkage. That was 19.27, higher than the original button of gold. So you see, I have brought the gold under an influence that it was never brought under before. I give you a specific gravity in that gold that you never get in a piece of gold melted in the oven. I give you a filling that does not shrink. The shrinkage Dr. Tenney refers to comes more from his manner of handling the investment material and the temperature at which he casts it. All those things have more to do with it than a change of shape of the gold itself. (Here the speaker referred to tables of figures relating to expansion of gold, change of temperature, etc.) You will find another great trouble will be in the temperature at which you mold the gold. Think of the possibilities in science of finding out the conditions under which this gold can best be handled. For instance, at a given temperature gold will have one effect; at another temperature it will have another effect. The mold into which you throw that gold will have an effect on it. All of these conditions are going to be subjected to scientific investigation. Take, for instance, the mixing of the investment material. At the present time it has been mixed by the rule of thumb; so much investment; so many seconds of stirring by one man, and it is not quite thick enough. He puts in more investment, stirs the thing, and finding it to be too thick, he puts in too much water, with the result that it is hard to get the chemical affinity. We find certain mixtures of investment give the best results, not only for mechanical reasons, but because there is a certain amount of moisture necessary for plaster, as shown by the experiments of Prothero, Snow, and others, along the line of shrinkage of plaster.

Now, here is a scientific process. The whole thing lends itself to a scientific solution. You take an investment and it has a certain amount of plaster in it, not much water, and at the end of say ten minutes it begins to set. Because the chemical affinities of that plaster have not been thoroughly satisfied, the moisture that is still in there would go on and change the chemical process of the setting of that plaster until tomorrow, when you would have a differently shaped mass from what you had today. As soon as that mass has hardened, by heating it, you drive away the excess of moisture which would have a tendency by tomorrow morning or the middle of the next day to change its shape. You have driven it out, and you have got an investment which is not going to change its shape. All along these lines you should start in and work, and bring the results of your labors to the society.

Dr. G. V. Black of Chicago:

I want to say a word or two in regard to the matters of which Dr. Taggart has spoken, because I am interested in that particular phase of the work. I want to say, too, that I have been extremely interested in the papers that have been read this evening, and in the discussion. I think well of them. You all know that, as a rule, I am an advocate of gold fillings for the great bulk of operations. I am chewing my food now on cast gold inlays. I think the cast gold inlay has a broad place in dentistry and a great future, but it is not everything. I am not going to discuss that tonight. I want to speak more particularly of the phase of the subject that Dr. Taggart has brought out. I have been waiting for him to say these things, in order that I might follow him. He showed me the figures he has put on the blackboard a few days ago, and they surprised me very much. They have been in my mind ever since. Perhaps many of the members of this and other audiences do not know that in the line of physics and mechanics, metals are very unreliable in their strength, and very much labor has been expended to bring them to a greater degree of reliability, and the best result at this time leaves a variation, even in a single steel bar, of about one-quarter in the strength of its different parts. It is the supposition of scientific men that this difference in strength is due very largely to the irregular absorption of gases in these metals. I have had castings that were a little heavier. I have made castings in steel that were as high as 19.27 in the button left over the sprue, but in all my experience I have never found gold as heavy as 19.45, no matter how I built it. I have got the best casting I could, annealed it, cut a piece closely fitting a steel die, and then with a steel die on an anvil have hit it with a sledge-hammer, but did not get that density. I got a little greater density with a hammer in driving gold foil into a steel die, the die being on an anvil, but I did not get 19.45, and I have never seen any gold cast of that weight until I was shown this.

This matter of taking specific gravities is a very delicate one, and no man who has not his hands regularly in the work can do a single piece of work of that kind which is reliable. I could not do it myself, although I have had a large experience in the taking of specific gravities. I would not trust myself with a single effort, just as I used to do when I sailed in my little boat in any kind of rough weather, I did not want to leave the harbor when I had gone for my season's outing until I had trained myself to the handling of that boat. And so it is with this kind of work. A man must be right in it; he must have his hand in it constantly. He must have his whole mind saturated with it to do it accurately. This is not only important in dentistry, but it is important in the whole field of mechanics. If this proves to be true, we will have stronger steel than we have ever had before, because we will use it in that. All of our metals will become more reliable. That is what that fact means, if it proves to be a fact. But it will require a considerable amount of experimentation to know.

Dr. Taggart is just right in what he said about the shrinkage of metals. I doubt very much whether it is the shrinkage of the gold in cooling that causes misfits; it is more likely to be in the other direction that Dr. Taggart has indicated. It is not the mold; it is in the shrinkage of plaster, in the shrinkage of the investing material, in the failure to get a perfectly fitting wax in making the model. There is where the greater dangers come, and not in the shrinkage of the metals. We do not know definitely what the shrinkage of metals may be at the point of cooling. Some metals expand at that time. Silver expands as it is cooling. We do not know very accurately what these things are; but we know enough to know it is not the shrinkage of the metal after it has once cooled or congealed down to a point where it is usable.

I am glad Dr. Tenney said many of the things he did because I believe they are right. I would like for him to take a first-class assayer's scales, put a tooth on it, and perfectly balance it, or a piece of ivory and balance it. You cannot put a molar tooth on such a scale and balance it for an hour because it is absorbing moisture or giving off moisture, and as it absorbs moisture it swells, and as it gives off moisture it shrinks. Ivory is one of the most sensitive things to expansion and contraction by changes of weather we know about, and if you want your inlays to lay around you should not use ivory.

All billiard players know and realize that billiard balls get heavy and loggy in bad weather, and they do not want to play in bad weather. Cut your cavity in steel and hardened steel at that; that is, harden it after it is cut, and you will have the most reliable thing we have got today.

Dr. George W. Cook of Chicago:

I wish to commend the excellent papers that have been read this evening. About ten years ago Dr. Black expounded some scientific theory before this society and about everybody got up and left the room. Now, if the inlay has done anything at all, it has influenced men who are doing scientific work to get on their feet and advocate scientific means in determining the best methods of filling teeth. The best evidence of growth of this society is that its members are willing to remain here until twelve o'clock at night to hear scientific theories discussed.

Pretty nearly all methods and all means of application of any science go through a certain empirical period, and evidently the inlay has reached the time when scientific study is required to further advance or perfect methods in its use. This evening has been one of the most interesting sessions of this society I have ever attended. Perhaps we will study the king of all filling materials—cement—(laughter) and soon have a great substance for our Mosaic workers in dentistry. If we could discuss things of this nature more frequently than we do, the probabilities are that we would accomplish more than we have done, and dentists really want more knowledge on the subject of their profession.

Dr. G. V. Black:

While this has been a magnificent discussion of methods, there has not been one word said as to the pathological conditions requiring this or that thing to be done. Take it home with you.

Dr. William T. Reeves of Chicago:

There was one statement made by Dr. Haskins in connection with cavity preparation in this locality (illustrating on blackboard) which was neither approved nor disapproved. I refer to the contact point between molars and bicuspids. I would like to know by a rising vote of this Society how many approve of the statement as made in connection with saving such teeth or tooth with a foil filling as conserving the greatest portion of tooth surface.

Dr. Haskins:

If you are going to vote on this question, make it non-cohesive gold, and let only those vote who have had experience of their own, as otherwise they are not judges. I insist on that point.

Dr. Reeves (continuing):

There is a point I want to make in connection with what Dr. Black had to say. There is a class of cavities occurring at the contact point that it would be folly to fill in the limited area of infection, but if you will cut out all decay and reach good glistening enamel, and carry it no further along the lines of extension for prevention, and fill with a porcelain filling that is glazed, having porcelain for its finished surface, you will have filled that cavity and protected it practically for all time—at least, as much so, if not better, than by extensive cutting for putting in a gold filling, for the reason that the glazed surface of porcelain will not hold any of the gelatinous plaques, consequently the joining of the tooth surfaces to the natural enamel is protected to the extent that you have replaced the surface with porcelain, a feature that is often lost sight of in connection with the use of porcelain for filling teeth, and which is one of the best features in that line of work. I have had forcibly called to my mind patients of mine, a lady and gentleman, who have moved to Detroit. They have been there about a year and a half, but within a week I had the pleasure of meeting them again, and they spoke of a dentist having separated the teeth of one of them and finding two small porcelain fillings in position at the contact point. He had marveled at their being there of that size and preserving the teeth. Those fillings have been in that position for five years or longer.

Dr. Elliott R. Carpenter of Chicago:

I want to add a few words to this symposium. I have been a very ardent and serious inlay worker for the last six years, and I have had all the sorrows and the joys you all have had, and I have only one or two points I want to make that have come to me as the result of my sorrows. One of them is the fact that inlays after casting oftentimes have what you call a silicate coating, and it has occurred to me possibly that was the result of the pouring of saliva on the wax inlay. For about six weeks I have been washing all these wax inlays in water, then in alcohol, and have not yet one case of such coating to report. That is merely a suggestion.

Dr. Blair referred to a case of bridgework where the bridge failed in its retention, and I have contended that inlay work, where it is to be used as an abutment, must be made on the lines of acute angles, and I believe that is the only way you will have results. It must have a flat floor; the lines running horizontally, forming that floor, must be acute; the side of the walls must have another flat or straight line running from the sulci to the proximal end, and at the end of the sulci it should be made in the shape of a cone, that cone to draw the inlay into place its full length.

THE DENTAL COLLEGES OF AMERICA

Meharry Dental College, Nashville, Tenn. First class graduated 1887. Total number of graduates to January, 1908, 100.

Virginia School of Dentistry, Richmond, Va. First class graduated 1898. Total number of graduates to January, 1908, 50.

Department of Dentistry University of Tennessee, Nashville, Tenn. First class graduated 1880. Total number of graduates to January, 1908, 405.

THE DENTAL COLLEGES OF AMERICA

Dental Department University College of Medicine, Richmond, Va. First class graduated 1895. Total number of graduates to January, 1908, 124.

Department of Dentistry Vanderbilt University, Nashville, Tenn. First class graduated 1880. Total number of graduates to January, 1908, 850.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

COMMISSIONS AMONG PROFESSIONAL MEN.

If there is any one thing more degrading than another in professional relationships it is the practice of paying commissions. That is for a specialist to pay a general practitioner a commission for patients referred by the latter to the former. It is in every way wrong, misleading and wholly demoralizing. If one dentist refers a patient to another for service it is only because of the fact that the other can perform the service in a more competent manner or has more time. It is in reality a favor to the general practitioner to have some one who will take care of cases that he is not equipped to care for or has not the opportunity.

The patient is supposed to pay the specialist precisely what the service is worth and no more, but if the specialist pays a commission to another practitioner it of course must come out of the patient's pocket, who is thus made to pay two men for the service of one. This is taking a mean kind of an advantage of the patient and it is so wrong in principle that it ought to have no place in professional procedures.

The practice of graft in the business world has been sufficiently condemned in the public press and by all right thinking people. The principle has been attacked in our courts of justice till the very name has become a stench and a by-word. What then shall we say of such methods in professional life? Simply that they are abominable and in every way degrading. This bid for patronage on the part of a specialist is equal to a tacit acknowledgment that he has not the ability to win his way on merit.

The profession of dentistry has not been slow to support legitimate specialists when they have had merit and there is no excuse for offering commissions except the unworthy one of policy and greed.

Two men combine to do a definite wrong whenever a commission is paid for professional service—the specialist who offers this alluring bait to the general practitioner for his "inflooence," and the general practitioner for accepting something for nothing and something to which he has, by any kind of reasoning, not the slightest right. And be it said both men are equally guilty, the one who offers a commission and the one who accepts it. Neither can be as good a man nor as honest nor as professional as if he held himself above this kind of practice. No man ever reached out his hand and accepted a commission from a specialist without being demoralized by the act, and no man ever reaped a permanent reward from such methods.

It besmirches alike the one who pays and the one who accepts, and leads inevitably to a disintegration of character which reacts materially as well as mentally. It enriches not the purse and makes poor indeed the spirit of the participants. It is wrong in principle and should be frowned on by every true professional man as unworthy recognition in our ranks. Dental societies are taking up the matter and no specialist who offers a commission can hold membership in them. The spirit of professionalism is dominant after all and while there may be a few who still thoughtlessly indulge in this practice it will eventually be stamped out of our professional life. It must be.

THE CHICAGO-ODONTOGRAPHIC SOCIETY.

It seems appropriate to call attention to the work that is being accomplished by this society. It is now the largest local dental society in the world and in the near future it will be materially increased. There are at present more than 850 members, and an organized effort is being made by the officers to increase it to at least 1,000. With this end in view a really exceptional program has been prepared for the coming year which when published will appeal to every practitioner in a way to make all eligible men desirous of membership. There is a good fellowship in this society which is really refreshing, and the attendance at the monthly meetings even when the membership was less than it is now has frequently been between 300 and 400. During the coming year it will be greater than this, owing to the character of the program and the awakened interest in the society. In our next issue we hope to publish the program in full for the year, and if any important subject has been left out it will be because the subject becomes important between now and the publication of the program. President Gethro and his able assistants on the various committees are working hard to make this the banner year of the society, and they will succeed.

THE EDITOR'S DESK.

PATIENCE.

If I had the training of every boy in the land one of the first lessons I should try to teach him would be to overcome impatience. How long it does take the average individual to learn this lesson, and how seriously handicapped an individual is in life till he has it learned. The proverbial impetuosity of youth is all right to get up steam with, but it requires the balance wheel of patience to make the machine run true. Whenever I see any one growing impatient and fuming because things do not go to their liking, I am impressed with the awful waste of energy and dissipation of power. Calmness always controls, but impatience perverts. It is invariably the patient man who wins in the end, and who lives the longest.

If things do not work just right, keep cool. You will probably need all your reserve power to meet the situation without wasting it in impotent stamping. Battering your head against a brick wall hurts nothing so much as it does your head, and a moment's quiet reflection to steady your nerves is worth more than an hour's rampant rage.

One of the chief demands for patience is in dealing with the public. All sorts and conditions of temperament confront the individual who comes in daily contact with the rank and file of humanity. Impatience with the foibles of people soon leads to inharmony, inharmony to disagreement, disagreement to distrust, and distrust to hate. You simply cannot hold people if you are impatient with them. When anyone of a trying temperament comes into your business life study his peculiarities and have patience. You can never control people unless you understand them, and you cannot understand them unless you study them. To do this in a way to search out the hidden springs of motive which impel their actions requires patience.

And the best of it all is that the cultivation of patience is one of the most effective means of self-development. You can never hope to control others unless you can first control yourself, and the very effort to control yourself constitutes growth. To be patient is to grow.

Lincoln was a patient man and so was Grant. Neither would have accomplished what he did—in fact, neither would have ever been heard of in the world—had it not been for this sublime quality. All really great men have been patient, though in some instances brief periods of impetuosity have temporarily hidden the larger attribute. The patience of Job—just his patience—has made his name immortal. We cannot all be immortal in the sense that Job was, but we can all try to be patient, and that is the first step to immortality.

One of the best means of developing patience in dealing with people is to learn to look at the other man's point of view. Remember always that there are two sides to every question—sometimes many more than that—and if you put yourself in the other fellow's place and see the matter as he sees it, even if you do not agree with him, you are sure to be more patient with him.

If humanity would learn this lesson there would be fewer lawsuits, less contention, greater harmony and more certain happiness. Strive to be patient—even with fools. They may not know they are fools.

DOMESTIC CORRESPONDENCE.

RESPONSIBILITY OF DENTAL JOURNALS FOR DEFECTIVE HISTORY.

To the Editor:—

Sir:—In the July number of THE DENTAL REVIEW there is an interesting and well written article by Dr. M. R. Harned on the "Romance of Dentistry." While the author's apparent definition of romance may not agree with that of the Century dictionary, the present writer is not disposed to be hypercritical, as romances in general are not strictly in line with historical facts, which, in the present case, from the writer's experience in dentistry, have been universally very prosaic.

The query that prompts to writing is this, Is it not time that editors of dental journals should cease to publish false history? Our profession is comparatively young and is making history very rapidly. These records are mainly to be found in the dental periodicals, and it becomes the duty of the managers of these that no false note is introduced to disturb future historians. In the writer's experience as an editor, the most annoying part of the work was the effort to correct the statements of careless correspondents. The indifference of writers in this respect has added materially to the exhausting labors of all editors who aim to eliminate false history and incorrect spelling of proper names from their pages. The average writer in attempting history takes the first statement he can find and labels it true. When his article is finished it becomes a sort of pick-up of periodical hash. The evil is growing in magnitude through the constant new additions of youthful dentists, worthily anxious for recognition, but, unfortunately, not all equally desirous of waiting until, through laborious study, they have learned to hesitate and verify by repeated examinations, their supposed facts. It is possibly asking too much of editors to do this work, but they should correct by note or return manuscripts, thus defective, for author's revision.

This paper on the "Romance of Dentistry" serves as an excellent text, for it lacks all the elements of true history with the freedom usually taken by romance writers. It is not the intention of the present writer to undertake a critical examination of all the author's statements. This has been thoroughly done by Dr. Edmund Noyes in the discussion which followed, but the following quotation may be taken as a type of the false history not confined, by any means, to our author. He states that:

"In 1854 a rational theory of preventing and curing abscesses (called ulceration) was promulgated. In 1866 root filling was developed with its many failures. It was comparatively new to fill roots and this development was the outgrowth of abscess treatment, for, previous to that, an abscessed tooth was usually condemned to extraction. It was this year in which the agitation of the idea of salivation being produced by wearing a vulcanite plate was on (due, of course, to mercury in the coloring matter) and one of our great dental societies expelled two members for making them."

The temptation is to italicize this paragraph, but consideration for the compositor permits it to stand as originally printed. Abscesses were treated long before 1854 and teeth were not condemned to extraction because of this pathological condition. No rational treatment was promulgated that year or any year thereafter until excision of the necrosed root was suggested and practiced and bacteriology came to be better understood through the labors of many, but especially through the work of Pasteur and Koch. The general treatment in 1854 was the same as that practised at the present time.

Root canal filling was not new in 1866. The writer had been teaching this for years and practised it for many years prior to this. One of the most instructive lessons received was while watching Dr. Elisha Townsend dextrously filling root canals with gold foil in 1853, and his skill in filling was equally the subject of admiration and each of these operations might be worthily dwelt upon by those who appear to think that gold filling especially had its origin and reached its perfection somewhere not far removed from the Mississippi valley. Root filling did not, however, have its origin with Dr. Townsend. Dr. Maynard, the inventor of the celebrated Maynard rifle, was probably the first to perfect this method of treatment, but he did not originate it, for Dr. Edward Hudson, of Philadelphia, in the early years of the Nineteenth century, filled roots and the evidence has come down to us to support this statement, but there is nothing to show that he was the first in this important procedure.

The author of the paper comes very nearly being correct, when he places the worry over the supposed salivation from rubber plates in this year 1866. The general use of rubber as a base for artificial teeth commenced about 1858, and the cry of mercurial poisoning very soon thereafter began to be heard. To such an extent was the inflammation of the mucosa observed by dentists and medical men, that it became imperative that this problem should be solved, for unless this were done rubber, as a base, could not be tolerated. The Pennsylvania Association of Dental Surgeons, Philadelphia, appointed a committee consisting of T. L. Buckingham, E. Wildman and James Truman to investigate this matter. Months of research, chemical and microscopical, were expended on this work before the report was duly presented and published. The result, in brief, was that properly vulcanized rubber could not part with any mercury that might be set free by vulcanization from vermilion—the coloring substance. It was proven that free mercury was, to a limited, extent, to be found after the heat of vulcanization. It was shown that a properly vulcanized plate was impervious to external fluids and that free mercury was equally forced to remain in the interior of the rubber. It was proven that no free mercury existed on the surface of the vulcanized rubber. The conclusion was, therefore, negative, as far as mercury was concerned, but the cause of imitation of the mucosa remained unsettled. It was supposed to be due to uncleanliness and non-conductibility of the rubber. Bacteriology, at this period, was not sufficiently advanced as a science, to warrant the committee to form an opinion in that direction. The true solution of this problem came several years later through the work of Dr. Black, in which he proved that this inflammation was mainly due to the action of the waste products of bacteria, developed upon the palatine surface of the rubber plate. The question was thus settled through these two investigations and with proper efforts, principally through the use of tin coatings, the factor of uncleanliness and bacterial development was eliminated and we have ceased to hear further of inflammatory conditions through mercurial poisoning.

The author, on another page, gives Dr. Wescott, of Syracuse, N. Y., the credit of discovering cohesive gold. It was discovered long before by gold-beaters, who found the greatest difficulty in overcoming this tendency of freshly prepared gold foil to cohere, rendering it unfit for dental use. From this condition was developed the true non-cohesive gold of Abbey and Morgan of Philadelphia. Dr. Westcott, without doubt, made use of cohesive gold, but the writer was not aware of this, although in active practice at that time. Dr. Arthur deserves all credit, not alone for its introduction, but for the instruments adapted for its use. Those employed for the packing of non-cohesive were not suited for this form of gold foil.

The temptation is to correct more false history, not in this paper only, but running through all dental literature. Space and time will not permit further extension and will close with the desire that the duties of the present and future editors may be enlarged, so that we may be measurably free from incorrect history so trying to many of the older readers. JAMES TRUMAN.

New York, N. Y., June 12, 1908.

Editor of The Dental Review:—

Dear Sir:—I take pleasure in informing you that at the recent national meeting of the American Medical Association just held in Chicago, it was my pleasure in the House of Delegates to introduce the following resolutions:

"Whereas, The value of the services of the dental corps of the army is now thoroughly recognized,

"Resolved, That the legislative committee be instructed to further such legislation as will place the dental corps in the army on a commissioned basis, such legislation to meet the approval of the War Department."

They were referred to the reference committee on legislation, who brought in the following report, which was unanimously passed by the House of Delegates:

"The House of Delegates last year endorsed a bill, providing for the dental corps of the navy, and it seemed desirable to make the proposed resolution more general so as to embrace both branches of the science, and the committee recommends the adoption of the following resolutions:

"The House of Delegates of the American Medical Association recognizing the great importance of the services of the dental corps of both navy and army, and appreciating the importance of placing both on a commissioned basis, authorizes the committee on legislation to assist in securing the passage of such bills as meet the approval of the War Department, or the chief of the Bureau of Medicine and Surgery of the Navy."

The work was made much easier by the magnificent amount of missionary work done by the dentists throughout the country, especially in the middle and far west and southwest, as I found that the delegates from these sections appeared to be thoroughly posted by their local dentists as to the matter at issue. This, in no light measure, contributed to the result attained, which I am confident will lead to the placing of the army corps on a commissioned basis this coming winter. I have the personal assurance that the committee on legislation of the American Medical Association will use the same efforts to obtain successful legislation in this matter as

they have used in obtaining the reorganization of the medical department of the army. Respectfully yours, M. L. RHEIN,
Delegate from the Stomatological Section.

HOSPITAL, ILL., July 2, 1908.

Editor of THE DENTAL REVIEW:—

Dear Sir:—Will you kindly allow me to submit to you a report of the dental work done in the Illinois Eastern Hospital for the Insane during the month of June? I believe that such reports published will awaken the profession to a full knowledge of the work to be done in such places and keep us constantly at it until we see that every public institution is properly equipped for this very necessary work for over 15,000 unfortunates.

Dental work for June:

Plates	4
Gold fillings	5
Gold crowns	6
Cement fillings	3
Silver fillings	30
Treatments	47
Extracted	90

Yours respectfully, GEO. A. MILLS.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

To Temper Instruments:—In the matter of tempering I have frequently found that plunging the heated instrument into beeswax or oil has produced a temper of sufficient hardness.—*G. J. Clint, Winnipeg, Canada.*

Amalgam:—All the men who took up the amalgam question were engaged in a good business. Amalgam now has been redeemed, and it goes without saying, amalgam will save more teeth than any other one material. If a hundred dentists were to choose a material they were capable of working with, I think they would find that amalgam today is a better tooth saver than any other we have.—*J. M. Barcus, Carlinville, Ill.*

Dental Honesty:—The only thing to sell anything with is truth. The results are accurate, well known, and therefore scientific. Let the professional man study business science, grasp its fundamental principles and stand by the consequences. Let him make more money in less time by deserving larger fees. Thus he will not only give greater satisfaction to his patients, but he will increase the respect of his profession in the eyes of the world.—*E. J. Perry.*

Making One's Own Instruments:—I think there is no economy in making one's own instruments, but of course there is no objection to making them for the pleasure there may be in it. I prefer to replace those instruments which are commonly used and rather easily broken by keeping duplicates in the cabinet ready to use. I think that time can be spent in many ways to better advantage than making one's own instruments.—*M. H. Garvin, Winnipeg, Canada.*

Dental Education:—The consensus of thought is that the colleges, together with the examining boards, in the main are not recreant to the trust reposed in them. That dental education, like all other kinds of education, under favorable environments, follows the lines of development and not of degeneracy. That it is the duty of the profession, together with teachers of dentistry, to see that this environment contains sufficient stimuli to ever keep its tendency upward and not downward.—*C. E. Bentley, Chicago.*

Participating in Public Affairs:—There is one thing I have observed about dentists, and that is, very few turn aside from their profession and take up some other work incidentally, or for the purpose of recreation, or participate in public affairs to the same extent as other citizens. That is characteristic of dentists; but, I suppose a large proportion of physicians do the same thing. I think dentists and physicians should take an interest in things that are going on in their respective communities.—*A. W. French, Springfield, Ill.*

New Remedies:—It is a question whether we would ever get any new remedies except those that are sold by the dealers. Various members of the profession have made suggestions of many remedies that would be useful to the dental profession, but many dentists prefer to buy from the dental supply houses remedies that are a sure cure; it does not matter what they are used for. We find a great many remedies suggested for mummifying the pulps of teeth while we are asleep, and they will stay dead until we are probably away on our vacations, then create trouble.—*George W. Cook, Chicago.*

Leucodescent Light:—Having read up all I could find on light therapeutics, I decided to try the leucodescent light, as it is free from ill effects such as burning which is a decided point against the X-rays. The blue light was not as powerfully germicidal as the leucodescent. In neuralgias and acute inflammations the pain- relieving action of the leucodescent light is one of its most valuable qualities. Inflammatory conditions, local or deep seated, can be quickly controlled because the rays relieve congestion and prevent stasis by restoring equilibrium and toning up the tissues.—*F. E. Raiche, Marinette, Wis.*

Advertising:—There are legitimate and illegitimate methods of advertising. A man has a right, it seems to me, to advertise himself, that is, to become known. How would a young man ever build up a practice if he locked himself up and kept away from his fellow beings? It is right that a young professional man should gain acquaintances in legitimate ways. I do not mean that he should work clubs or churches, but he has a right in modest ways to gain the acquaintance of good people who may become his patients. A man may advertise himself in the manner indicated, and be entirely ethical, and it is really the only method of advertising that is legitimate.—*T. L. Gilmer, Chicago.*

The Blood Supply to the Teeth:—The blood supply to the dental follicles and growing teeth differs from that of the completely formed teeth in the mode of its general distribution. That is, while a blood vessel or single arterial twig may enter the apical foramen in the fully developed tooth, passing directly from the main artery in doing so, the blood supply to the tooth previous to this time is from the walls of the follicle, independent of the main artery. The teeth are supplied with blood by branches from the main maxillary arteries, but this supply is received through the numerous common vessels which traverse the cancellated bony tissue of the jaw and the alveoli, forming a free anastomosis, some of the vessels of which enter the pulp through the root apex.—*I. N. Broomell, Philadelphia, Pa.*

Repairing a Hole in a Crown:—It is often necessary to repair a large hole in the occlusal surface of a molar crown. This may be accomplished successfully in the manner described below. Remove the crown and scale off any cement that has adhered to the root, and drill out the cement in the crown. Replace the crown in position on the root and press wax into the opening in the crown, being careful to leave enough extending occlusally to take an imprint of the opposing cusps. Take a bite in this wax and remove crown with wax intact. Flow plaster into the crown and when it is set remove the wax. If the hole does not include too much of the occlusal service the operator may retain in his mind the approximate form by studying the impression in the wax before removing it. If the hole includes a large portion of the occlusal surface the cast inlay method may be adopted. In the first instance make a matrix of the cavity and flow gold into it, building it up to the occlusal form as accurate as you can. In the second instance cast a gold inlay, place it in the cavity and attach to margins with solder. This will provide bulk of metal to insure the crown from failure due to the first cause of the hole. The occlusal surfaces of gold crowns are usually made too thin.—*G. W. J.*

Convenient Miniature Spatulas:—These little spatulas are made of common pins. The blades are formed by passing from three-eighths to one-half inch of the points between the rolls of a rolling-mill. I make them of different forms and thicknesses. In making one with a rounded end the point should be ground or cut off. Some I gold-plate, using for the purpose Caulks' quick method plating solution. After shaping the blades the heads are cut off and a broach holder is used for a handle. They are used for placing small quantities of cement just where it is wanted when lining cavities and setting inlays; for placing devitalizing paste; for placing cement in the enlarged pulp canals when setting post crowns—for this purpose the narrow sharp-pointed ones are used. A wisp of cotton wrapped about the blade of one that has been gold plated makes a most excellent carrier for medicines that are to be applied to the gums around the necks of teeth. The stiffer ones bent to the desired shape may be used for trimming the margins of freshly inserted alloy fillings. In the laboratory they are used for placing the borax paste when soldering; for working investing material into the little places where one wants it to go; for removing wax that gets between the teeth when doing plate work; and for many other purposes that suggest themselves from time to time.—*Mark Hayter, Dallas, Ore.*

MEMORANDA.

THE WISCONSIN STATE DENTAL SOCIETY.

This society meets at La Crosse July 21, 22, 23, 1908. W. H. Cudworth, president, Milwaukee. Harvey N. Jackson, secretary, Milwaukee.

FIRST DISTRICT DENTAL SOCIETY.

The First District Dental Society of Illinois will hold its next annual meeting in Peoria Tuesday and Wednesday, September 29 and 30, 1908. H. W. McMillan, secretary.

AMERICAN SOCIETY OF ORTHODONTISTS.

The eighth annual meeting of the American Society of Orthodontists will be held in Washington, D. C., on Monday, Tuesday and Wednesday, November, 2, 3 and 4, 1908. Frederick C. Kemple, secretary, 43 West Forty-eighth street, New York City.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

At the annual meeting of the Wisconsin State Board of Dental Examiners, held in Milwaukee on June 15-19, 1908, J. J. Wright, of Milwaukee, was elected president, and F. A. Tate, of Rice Lake, secretary. Address all communications relating to State Board to F. A. Tate, secretary, Rice Lake, Wis.

LOUISIANA STATE DENTAL SOCIETY.

At its recent meeting, held at New Orleans, the following officers were elected: President, H. J. Feltus, of Baton Rouge; first vice-president, J. Rollo Knapp, of New Orleans; second vice-president, O. L. Braud; recording secretary, Dr. O. J. Reiss; corresponding secretary, Dr. O. L. Plough; treasurer, Dr. W. M. Miller.

MISSISSIPPI DENTAL ASSOCIATION.

At the meeting of the Mississippi Dental Association, held at Jackson June 9, 10, 11, the following officers were elected: Dr. W. R. Wright, Jackson, Miss., president; Dr. C. F. Boger, Natchez, first vice-president; Dr. W. H. Reaben, McComb City, second vice-president; Dr. L. B. Price, Corinth, secretary; Dr. E. A. Johnson, Holly Springs, journalist.

DEATH UNDER CHLOROFORM.

A death occurred in the office of an Austin (Texas) dentist recently. A lady called on the dentist with a physician to have a troublesome tooth removed. She insisted on chloroform. It seems the attending physician had administered chloroform to her previously. When he placed the chloroform to her mouth this time she pushed his hand away and collapsed immediately. Heart failure, caused by extreme nervousness from pain of the troublesome tooth, was assigned as the cause.

RECENT PATENTS RELATING TO DENTISTRY.

889,085—Dental swaging apparatus H. W. Allwine, Omaha, Neb.

888,455—Dental plugger, A. Atkiss and D. C. Carson, Philadelphia, Pa.

888,484—Mouth-prop, J. L. Gehorsam, New York, N. Y.

889,002—Dental cement and manufacturing the same, F. L. and G. L. Grier, Milford, Del.

890,143—Brush for cleaning artificial sets of teeth, E. Kuzzer, Dresden, Germany.

890,913—Amalgam press, A. J. Leveque, Lead, S. D.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

COLLEGE COMMENCEMENTS.

WESTERN RESERVE UNIVERSITY COLLEGE OF DENTISTRY.

Graduates—S. W. Allen, R. J. Armstrong, W. J. Bader, G. T. Baldwin, F. W. Barrett, R. Bertsch, C. P. Caris, D. Cobaugh, H. F. Fletcher, A. C. Frost, H. R. Francis, T. J. Hill, S. F. M. Hirsch, J. A. Kindler, P. J. Moran, J. Palotay, E. H. Perkins, W. T. Reid, O. J. Sayers, C. M. Seeley, L. A. Stackhouse, S. B. Stern, W. C. Stillson, C. R. Wallace.

UNIVERSITY OF SOUTHERN CALIFORNIA COLLEGE OF DENTISTRY.

Graduates—C. M. Alderson, W. A. Barney, A. B., R. Bean, A. J. Brenner, A. N. Lord, F. DeW. Carney, W. W. Chapman, F. L. Osenburg, L. L. Day, J. E. Davis, C. T. Ehred, H. J. Erwood, H. H. Farnham, F. A. Graham, I. P. Gardner, E. E. Helsby, D. B. High, E. A. Johnson, A. A. King, C. E. Buck, D. N. Merchant, G. E. Odell, C. J. Cresmer, W. E. Prince, H. A. Pitman, F. D. Schildwachter, L. W. Sinclair, D. D. S., D. L. Sitherwood, C. H. Van Schoick, P. Voorhees, C. R. Woollomes.

UNIVERSITY OF MINNESOTA COLLEGE OF DENTISTRY.

Graduates—W. J. Bandelin, C. J. Bergh, E. W. Bunce, L. M. Coleman, J. F. Conway, R. W. Countryman, V. A. Franta, C. E. Grafsland, G. A. Hagberg, H. W. Harmon, F. R. Harrison, C. C. Higgins, I. S. Hull, M. J. James, J. Johnson, J. A. Kjelland, K. G. Knoche, H. C. Lawton, D. J. Leary, E. M. Lier, F. M. Madden, P. J. Miesen, T. J. Moore, H. A. Munns, C. J.

Olson, H. A. Radermacher, F. L. Rayman, C. L. Sandstrom, J. E. Schapler, L. C. Schmitz, E. J. Simon, L. R. Snyder, L. E. Spurbeck, W. P. Tanner, W. M. Trench, A. A. Van Dyke, A. P. Whitson, M. B. Will, L. B. Williams.

UNIVERSITY OF MICHIGAN COLLEGE OF DENTAL SURGERY.

Graduates—G. G. W. Andree, B. S., Columbian University, G. H. Attarian, W. R. Barney, J. D. Bentley, H. E. Brady, E. S. Braithwaite, H. W. Brouse, F. W. Bryant, W. J. Burley, E. F. Burns, A. E. Camp, G. O. Clark, G. R. Clark, J. A. Connery, Jr., A. H. de Goenaga, E. A. de Goenaga, G. W. Dunham, B. R. East, J. G. Erwin, R. Evans, F. J. Farthing, D. Faucher, H. J. Fox, H. A. Goodwin, E. L. Hering, J. J. Jacobs, E. T. Keating, H. D. Keenan, E. G. Keith, J. E. Kilgore, H. E. Kraeger, F. E. MacMullen, H. J. Maher, M. M. Main, B. H. Masselink, C. N. Merritt, P. D. Miller, J. G. Morningstar, W. B. O'Neill, H. F. Parks, W. J. Plunkett, C. W. Pratt, J. C. Ranger, J. E. L. Richmond, B. A. Roelofs, C. A. Rysdorp, H. D. Schweinhagen, R. C. Simmons, P. W. Simpkins, R. W. Thomas, C. L. Thompson, L. Trega, W. J. A. Wagner, H. E. Wright.

Doctor of Dental Science—R. W. Bunting, D. D. S.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

Graduates—J. M. Adams, H. Alexander, C. U. S. Babcock, J. H. Baker, L. L. Baker, C. T. Barnsback, J. E. Beck, C. E. Berkshire, C. A. Bigler, C. W. Bird, A. L. Boman, J. McI. Bow, M. D. K. Bremner, A. Brighouse, F. Brown, M. J. Buckley, H. J. Burke, J. F. Burton, J. H. Cadmus, J. R. Calvert, A. W. Campbell, Ph. G., A. Carlstein, R. J. Chady, A. W. Chulock, A. D. Closson, W. A. Cochran, A. S. Cole, T. D. Craig, O. A. Crossan, E. T. Crowley, H. R. Cummins, V. W. Dedon, F. S. Diehl, G. E. Dixon, A. W. M. Dohrmann, J. M. Donovan, C. C. Dooley, E. L. Dunn, T. F. Egan, T. M. A. Elsnau, E. I. Evans, G. E. Exon, H. E. Frankhauser, W. S. Field, W. C. Follet, L. A. Foster, F. W. Freel, S. L. Friedman, L. B. Galbraith, W. H. Gill, N. H. Gist, D. J. Gordon, I. E. Graves, F. W. Grove, B. S., H. P. Gulstine, C. W. Hamel, J. G. Harris, A. C. Hartt, E. J. Hauser, W. F. Heisler, O. M. Henderson, C. LeR. Hixon, M. F. Hogan, D. E. Holmquest, C. W. Hoover, L. R. Johnson, as of the class of 1907, S. H. Johnson, R. Jones, J. C. Kauffman, Jr., C. M. Kennedy, J. F. Keyes, F. J. Krembs, M. Krembs, C. A. Lacaze, R. D. Langstead, S. A. Langton, Jr., H. A. Lazier, S. H. Leavitt, G. F. Legvold, A. A. Leininger, W. F. Lemmon, J. D. Lyding, J. B. Lyding, O. E. Lynch, G. C. McKay, N. B. McKay, D. Macdonald, O. E. Martin, L. C. Mason, S. McBroom, as of class of 1907, R. E. Mead, H. B. Meisel, A. E. Mertz, G. E. Meyer, B. E. Middlemas, H. L. Mills, R. M. Morange, W. A. Morgan, W. W. Mott, T. T. Mulford, A. T. Murdy, W. A. Myers, G. H. Oleson, A. F. Olson, L. T. Ott, C. E. Parker, L. P. Pasternacki, C. E. Pfeiffer, J. B. Rice, A. C. Rich, G. F. Richards, Jr., L. C. Richter, C. A. Roberts, E. R. Roberts, E. I. Rosheim, E. Salisbury, C. S. Savage, S. R. Savage, B. H. Scheffer, T. Schmook, Jr., A. M. Schoenbrod, N. W. Schoonover, L. Schultze, A. E. Scott, C. E. Sebelius, C. G. Shaddle, O. M. Sherman, R. O. Smith, R. Z. Stam, J. G. Stanley, T. E. Starry, G. E. Stephens, P. E. Stiehm, F. J. Smisher, G. E. Taylor, H. J. Tharp, A. R. Thomason, E. H. Thompson, G. Toraason, H. M. Uebele, E. L. Walbridge, Ph. G., R. H. Wallace, A. F. W. Walther, W. H. Watts, J. R. Welch, J. H. Wick, A. N. Wilen, C. A. Wintermute, F. H. Wittenbrook, A. M. Wolson, C. W. Young, A. W. Zemke.

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PUTREFACTION AND PATHOLOGICAL CHANGES IN TISSUE.*

BY GEORGE W. COOK, M. D., D. D. S., CHICAGO.

By the term putrefaction we mean the action of certain forms of bacteria on tissue after the physiological function of the structure has been partially or wholly destroyed.

The rôle played in pathological changes of tissue by certain putrefactive processes is one that has been studied extensively by such investigators as Pasteur, Baumann, Brieger, Nenchi, Salkowski, and a great many others whom it would be unnecessary to mention here. It was Pasteur who first advanced the theory that putrefaction could not take place by bacteria in the presence of the free oxygen of the air. This theory was later supported by the investigations of Nenchi, Bovert, Kerry and Bienstock. The last-named investigators further claimed that this process was only carried on by a particular class of bacteria, namely, the anaerobic. However, further observations were made that indicated facultative changes in dead organic substances, especially those which are rich is proteids.

In 1897-8 I made some observations on this question, with reference to certain bacteria that usually manifest themselves as putrefactive bacteria in the human oral cavity. I might say here that these investigations were not very satisfactory, and the work was laid aside at that time, until the publication of some work in 1903 by Rettger. In his published works he gave some technique that would assist in the determination of certain putrefactive products in such materials as egg albumen and lean meat. Again returning to my work on this question, I used some facultative aerobic bacteria isolated from the oral cavity, and especially one organism that I isolated from a putrescent pulp, which proved to be the bacillus putrificus cadaverous. This organism was one that is usually classified as a facultative saprophyte. It can under ordinary circumstances live as a parasite, but under certain conditions it is capable of breaking up dead organic substance and living as a purely saprophytic organism.

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*Read before the Illinois State Dental Society, Springfield, May, 1908.

In order that we may more thoroughly understand the terms as they will be used in this connection, we will define what we understand by oxidation and hydrolysis. Oxidation, as we use the term in putrefaction, is a process where the decomposition of the proteid molecule is carried on by liberating oxygen in the decomposing mass. The intermediate products are more or less complexed oxycides. The oxidation of tissue, like in putrefaction, attacks the nuclei, even though they are in contact with living substance, while, on the other hand, hydrolysis in this same process simply splits up the main molecule by liberating a molecule of water, leaving the nucleus intact.

Many bacteria can hydrolize proteids and cause the liquefaction of gelatine and blood serum, and in such cases they split off carbon dioxide from the amino acids, which are an acid group, and for a time leave the nuclei floating around in a liquid mass. Lycins and ornithin are usually acid in reaction. In such processes certain bases are ofttimes designated as products of putrefaction (monoamino acids). Cadaverin and putrescin are classed among the hydrolizing compounds, and are usually found in all putrefactive processes, where the complexed proteid molecules are hydrolized by the action of bacteria.

In the physiological activity of the cellular substance of tissue we have hydrolysis and oxidation going on together in the body, and the products of such processes are carbon dioxide and water, and the intermediate products which ofttimes do not leave the body for some little time after their formation are usually called leucomains. These last-named substances are analogous to the ptomaines that are produced by oxidation and hydrolysis in dead organic substances by bacteria In the synthetic building up of the proteid molecule we have dehydration of the nuclei by a sort of hydrolytic process. In this group is formed O H, which in living physiological tissue must always remain as an O H group, and can always be detected there by Millon's reaction. In the decomposition of this group by bacterial action, in the majority of instances there is present a phenol which is split off from tyrosin. It will be remembered in this connection that a proteid molecule is amphoteric; in other words, the compound is slightly basic and slightly acid, and under some circumstances they manifest themselves as a base. It has been found by a number of investigators that organic substances are better explained by hydrolysis than by oxidation.

In order that we might study the putrefactive changes that take place by certain forms of bacteria in tissue, we obtained animal teeth and removed the pulps, under as nearly aseptic conditions as possible, and undertook the decomposition of this material by the action of bacteria. Five and ten grams, respectively, of this pulp tissue were obtained and placed in test tubes, that had been thoroughly sterilized, and after a slow process of fractional sterilization we inoculated these tubes with various forms of bacteria. Sterile capillary glass tubes were placed in the culture tubes leading into other vessels where the various gases were collected and examined, to see as nearly as possible what gases might be given off from this putrefactive process. And I will say here that some of these tubes were placed under anaerobic conditions for bacterial growth, while others were used as aerobic cultures. In the aerobic tubes we had great difficulty in determining that putrefaction, in the strictest sense of the word, would occur except at the bottom of the mass. To give in detail the reactions that occurred in the anaerobic tubes would consume a great deal more time and would be uninteresting. Suffice it to say that carbon dioxide and certain of the marsh gas series were detected as gases. Ammonia gas was detected, at the very earliest, about the tenth day of decomposition, and it seemed that in the majority of cases it did not appear until the twelfth or fifteenth day, while some members in the marsh gas compounds appeared very early in the process and continued almost entirely from the beginning to the end of decomposition.

In the lower molecular forms of this series of compounds, in other words, the simple molecules of marsh gas are almost invariably in a gaseous state, and the thicker and the more waxy the gas becomes, the more complexed are these hydrocarbon compounds, and they sometimes, as you know, appear almost as a paraffin. I might state here in passing that it is to this substance that we have to look more closely for the discoloration of teeth in putrescent canals. There were about six members of this group we came in contact with that we have not yet made a complete analysis of regarding their combination with other substances in the process of decomposition. We could dwell at considerable length upon these compounds in putrescent pulps, but that is not the function of this paper.

In the study of this question of tissue decomposition by bacterial action, there are two main problems to deal with; namely, hydrolysis and oxidation. We have already stated that hydrolysis is the breaking up of compounds and liberating or adding to that substance water; while oxidation is the introduction of oxygen into the molecule of proteid-like substance forming different compounds. In the majority of cases the hydrolytic process is more common. The agents that influence both of these processes are in the main quite similar. As we have already stated, some bacteria hydrolize albuminous bodies, while others oxidize them.

In the process of decomposition of such substances as pulp tissue, we have in a great many instances both processes going on very much as in the synthetic organic substance. In the process of pulp decomposition by bacteria, absolutely in the absence of the free oxygen of the air, we have almost complete oxidation, and it might be well to state here that a large number of these bacteria are nitrifying. Thus, they are capable of oxidizing ammonia into nitrous and then into nitric acid. And in the decomposition of substances like that of the pulp, it is the amido-acid that furnishes the energy for the synthetic building up of the bacterial cell. In a great many instances we have formed in such processes a formaldehyde group, which we were able to detect in some of our tubes.

In the symbiotic action of bacteria we have these conditions so well established that it is of but little importance to discuss this phase at this time. Suffice it to say that all substances that influence the physiological activities of the bacterial cell, or influence their destructive processes, play an important rôle in the class of compounds that are formed in the decomposition processes. In the decomposition of the pulp we found that a strong sodium chloride solution influenced the formation of gases more than any other agent that was not capable of destroying the life processes of the bacterial cells. We later found that this fact was due to the liberation of the chlorine in the pulp tissues, and the chlorine combining with the methanes that were being formed there by decomposition. In a test tube containing ten grams of pulp tissue that was decomposing we could drop in one-half gram of sodium chloride (dechloride), and the marsh gases were completely arrested. On analysis, it was found that the halogen group of the chlorine series was formed, and this at once arrested the formation of the aldehydes, which is an important product in the decomposition of organic substance to form ptomaines and many other groups of substances.

We also tested our products for fat and fatty acids and glycerides, to find that in the mass of tissue of ten grams we were unable to get a trace sufficient to enable us to saponify any of the products formed. Since we use the word saponification in this connection, we wish to make this term clear in order that there will be no misunderstanding. Saponification can only take place in a complexed molecule of organic acid by the introduction of a hydroxyl compound. It then becomes a base and reacts only with an acid. So an agent that saponifies has but little action in reducing of compounds formed in the decomposition processes of animal tissue by bacteria. Therefore, this source of destroying bacteria and the decomposition products formed in the breaking down of organic substance is not one that offers a very profitable field for investigation at this time.

With our present understanding of what is meant by oxidation, hydrolysis and saponification, we are able to approach the subject of antiseptics in the process of putrefaction by bacterial action. Therefore, we wil' take up some of the agents that were tested for the arresting of pulp decomposition.

It might be said in this connection that these agents were made into solutions varying with the quantity of tissue that was being decomposed. We took a potash soap and added one-half gram to ten grams of tissue that was in the process of decomposition when the agent was added. We have previously stated that gaseous formations of the methane series were detected in all cases of decomposition. And when the agent applied to these tubes would arrest the formation of gas, we therefore made the interpretation that decomposition had been arrested. For instance, after the application of the potash soap in the quantity above stated had been reached, the formation of gas was completely arrested. We therefore designated this as an indication that decomposition came to an end. Quinine was added to twenty grams of decomposing meat in from one grain up, until it took ten grains of the quinine to arrest the decomposition, while three grains of salicylic acid would arrest the same quantity from decomposition. Now, the question would naturally arise, How long would this decomposing process be arrested? I might say that it is very questionable as to the exact time. In the case of quinine and salicylic acid, in the quantities above stated, they seem to permanently arrest the process, but when we transferred to fresh culture tubes a culture from the decomposing mass with the quinine, we got no culture. With salicylic acid we got culture. In the case of calcium hydroxide, one-half gram to twenty of the tissue, it arrested the decomposition processes for a while, and then the gas formation would start up, ranging from twenty-four to forty-eight hours. One of the difficulties that we found in this agent was that a portion of the mass that did not come directly in contact with the calcium hydroxide would go on decomposing, forming carbon dioxide, which readily changed the calcium hydroxide into a carbonate. And when this chemical change would take place, decomposition would again assume practically its original formation of gas.

I want to state here, with some degree of certainty, that none of the agents herein mentioned seemed to have any effect upon the neutralization of the gases, but the only way these agents arrested the process of decomposition was by their action upon the bacteria. Therefore, antiseptics and disinfectants, in the sense that we understand the two terms, arrest decomposition by acting upon the protoplasmic structure of the bacterial cells that are actively engaged in the process of decomposition.

Therefore, in considering all of the factors that enter into the prevention of putrefaction and permanently arrest the activities of the bacterial cell process upon dead organic substance, through the agent or agents used as antiseptics and disinfectants, one of the striking differences in the decomposition process is whether the decomposing mass is confined in vitro, or whether the mass is confined in a pulpless tooth, in which the apical end of the root had been sealed. For instance, it required a great deal more of the agents to arrest the decomposition in the tooth than it did in the test tube.

The test tube experiments were made in the usual way, while the experiments that were made in the teeth were conducted in the following manner: Freshly extracted teeth, with as nearly sound crowns as possible, were taken and sterilized in the usual manner of fractional sterilization, not using any chemical agents for sterilizing. The roots of these teeth were filled in the usual manner. Portions of the tissue were put in the teeth and inoculated with putrefactive germs. When I say putrefactive, I mean those that were strictly anaerobic. The tissue and the bacteria were then sealed in the tooth by a cement and paraffin, with a small capillary glass tube, puncturing the stopping, and the glass tube projecting into a gas-receiving bottle with various reagents to test the kinds of gases that were collected. It was not easy to add an antiseptic or disinfectant agent, but by removing the capillary tube, and with a medicine dropper with a point that would go into the capillary glass tube, these agents were dropped into the teeth, and the gas-receiving bottle was reattached. And the efficiency of the antiseptic was determined by the gas produced in the tooth itself.

It is a difficult matter to determine and explain the technic of the process. There are some crystallizable agents that we had considerable difficulty with in introducing into these teeth, but albumin-para-phenol-sulphonate, when introduced into these teeth, had a remarkable restraining power. One-half grain arrested decomposition for twenty-one days. I might say in this connection that most of these teeth were embedded in little blocks of culture media with their roots down to about the enameled junction with the cementum. This was done in order that the surroundings of the teeth might be kept in as nearly a normal condition as could be in laboratory experiments. I want to say, further, that I was surprised at how difficult it was to fill a root canal with any material out of the mouth.

One of the misfortunes of this question is that we cannot always get the pathological conditions in teeth out of the mouth or in test tubes. The natural pathological conditions that are found in the mouth and which we are called upon to treat are very different from the one we have under discussion.

It is the vast difference of the two localities of the process that oftentimes gives us the impossible things to do in the treatment of teeth. In conclusion, we must say that the rapidity with which the diffusion of the agent takes place, and the quantity of substance that it has to diffuse through are important factors. Secondly, we have to consider the period at which an agent is applied in putrefactive processes. One of the principal points that was observed in the work under discussion was the great difference of time which the agents took to diffuse themselves through the mass at the different stages of putrefaction, when the agents were applied, and the effect they would have on decomposition. For instance, those agents that diffused themselves through the mass more rapidly naturally arrested decomposition more quickly. If the agent was not sufficiently potent to destroy the life of the bacteria, the processes of decomposition would soon be reëstablished and the gas formation would again assume its original quantity. For instance, it was found that formaldehyde gas manifested more rapid action on bacteria than did almost any of the other agents that were tested, but the processes of decomposition were in many of the tubes very early re-established. On the other hand, such agents as thymol and phenol-sulphonic acid diffused themselves through the decomposing mass very slowly. The decomposition processes were held in check for a much longer time, and in many instances they were completely arrested, and where they did return in the presence of these agents they did not make their appearance before the fourth day, and from that up to the eleventh day.

There are several points and several agents which might be discussed with profit to the practicing dentist. For instance, in making up an application to a putrescent pulp in a tooth, it is important to bear in mind that none of these agents will arrest the formation of gases except as they affect the life of the bacteria themselves. Second, agents that diffuse themselves through a decomposing mass and temporarily prevent bacterial action have not destroyed the bacteria, nor has their activity been completely prevented; third, that the period at which we make the application to the putrescent pulp tissue is one that figures very largely in the results we obtain with various agents; fourth, all agents do not affect decomposition at the same period of the process in the same manner; fifth, that if pulp decomposition is going on slowly by hydrolytic processes, the creosol forms of antiseptic will prevent decomposition for a longer time than any other agents; sixth, in the oxidation processes of pulp decomposition, such agents as diffuse themselves rapidly, like formalin, will temporarily arrest the process much more quickly, and in many instances the patients would be relieved in a much shorter time than they would with some of the agents that act more slowly; seventh, it should be remembered that there are no specific agents for treating any pathological conditions; eighth, it should also be remembered that a putrescent pulp in a tooth, in the absence of the free oxygen of the air, is being hydrolized instead of being oxidized, and that the hydrolytic products neutralize antiseptic agents more readily than when we have oxidation.

The work here presented is not with the expectation or with the understanding that we have completely settled this question, but this work will possibly serve as a guide to a better understanding of the treatment of putrescent pulps.

FROM ONE-HALF TO ONE GRAM PULP TISSUE CONFINED IN TEETH IN THE MANNER PREVIOUSLY DESCRIBED.

	Number of hours.	Number of minutes.	Quantities of Agents.
Cresylic acid	0	54	gtt. 2
Cuprous chloride	2	6	gtt. 3
Potassium permanganate	1	36	gtt. 4
Potassium bichromate	1	4	gtt. 2
Perchloride of mercury	1	42	1-1,000 4
Salicylic acid	1	28	1-500 4
Parachlorophenol	1	12	Plv. gr. 5
Tribromophenol	1	32	Flv. gr. 2
Benzine sulphonic acid	1	22	gtt. 4
Aluminum phenol-sulphonate	1	8	Plv. 1 gr.
Lysol	1	34	gtt. 4
Phenol-sulphonic acid	1	12	gtt. 2
Thymol	1	4	Cry. gram 2
Formalin and cresol, aa.	1	53	gtt. 4
Formalin and oil of cloves, aa.	1	33	gtt. 3
Para-formaldehyde	1	7	Cry. gram 2

TESTS MADE BY PUTTING 20 GRAMS OF PULP TISSUE IN TEST TUBES IN THE MANNER PREVIOUSLY DESCRIBED.

	Number of hours.	Number of minutes.	Quantities of Agents. Gr.
Cresylic acid	1	20	X
Cuprous chloride	1	42	XX
Potassium permanganate	2	8	III
Potassium bichromate	1	4	IV
Perchloride of mercury	1	38	IV

	Number of hours.	Number of minutes.	Quantities of Agents. Gr.
Salicylic acid	1	17	I
Parachlorophenol	0	52	I
Tribromophenol	0	47	I
Benzine sulphonic acid	1	6	½
Aluminum phenol-sulphonate	1	54	II
Lysol	1	12	II
Phenol-sulphonic acid	1	6	½
Thymol	1	12	X
Formalin and cresol, aa	1	53	I
Formalin and oil of cloves, aa	1	11	I
Para-formaldehyde	0	38	XX

IMPORTANCE OF THE LOCAL AS A COMPONENT OF THE STATE SOCIETY.*

BY R. J. HOOD, D. D. S., SPARTA, ILL.

From the constitution of this, the Illinois State Dental Society, we quote the following:

OBJECT.

"Its object shall be to promote the public welfare by the advancement of the dental profession in education, science, mutual fellowship and good feeling, by bringing into one compact organization all of the dental societies of the state of Illinois, by the advocacy of proper legislation and by coöperation with the medical profession in all matters of mutual interest and advantage to the people of the state."

From the foregoing it is seen that the object of this society is far from being a selfish one, as all that we as a society can accomplish must react to the benefit of those who seek our services.

To better realize this altruistic object this society was reorganized in 1904 and through the wisdom and untiring efforts of that most worthy committee on reorganization we now have the largest paid-up membership dental society in the world, and I am sure I voice the sentiment of every member present when I say we are each one of us most proud indeed to be members of this, the largest and best dental society in the world.

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*Read before the Illinois State Dental Society, Springfield, May, 1908.

Our society has a wonderfully concrete and perfect organization and in the keeping of as competent men as our country can produce.

We have as members of this society those men who have largely made dentistry the profession it is today—whose names and works are known wherever dentistry is known.

The text books used in the leading dental colleges of the world have been the work of men who are members of this society. Was it not one of our sparkling geniuses who gave to dentistry that wonderful invention, the cast inlay? Why shouldn't we be proud to be members of such a society as this?

Then there are those located in the thriving, populous cities, or perhaps the obscure country villages, whose ambitions and ideals have been stimulated by this society, and who are working in their modest way to do "The common things of life, uncommonly well"—and surely he who does this is aiding in the work which this society aims to do.

We have, then—

First—The organization.

Second—The membership.

Third—The ability—developed and latent.

Fourth—The opportunity—what shall we do with it?

The attention of the entire dental world is focused upon us, and we are being most jealously watched to see what the ultimate outcome shall be.

This society consists of a number of component societies whose members gain membership in this organization by virtue of their membership in their local society.

As this state society must depend for its future talent and officers upon its own membership, it is self-evident that its future must depend almost entirely upon the success and prosperity of the local societies composing it.

These component societies must be the training grounds, where ideals and ability are stimulated and developed, which in turn must ultimately find their expression through this society.

We should not expect to find a member who is not interested in the welfare of his own local society display much concern regarding the success of this society.

The importance, then, of having prosperous component societies, to insure the future of this society, is at once apparent, and it is necessary at this critical time in our history that we give earnest thought and effort toward those means which will aid in making and keeping our component societies in a thriving condition.

How, then, can our local or component societies be best managed?

Three things must be done to accomplish this:

First—We must have the membership.

Second—We must have interesting and profitable meetings.

Third—We must keep up the enthusiasm and interest of our members and get a good attendance at our meetings.

Our membership committee should be an active, alert one, constantly on the lookout for new members, and the effort should be made to gather into the fold every eligible practitioner in our district. However, let us not leave this matter alone to this committee, but let every member make a personal effort to secure as members those whom he knows are entitled and who would be both benefited and a benefit.

This part of our society management demands eternal vigilance, and we should invite and solicit, repeatedly if necessary, in order to keep within our ranks every reputable practitioner in our territory, and when every component society does this, then this society shall have within it every eligible dentist in the state.

It would be wise to keep the various offices rotating that new executive ability may be constantly developed.

This training is most valuable and the offices are numerous enough that all can have their opportunity, and in this way the younger and new member shall see he is as necessary to the society's welfare as the old "war horse."

If our societies had a "press committee," consisting of one local, tactful member, who could report something of our proceedings, under dignified and proper headings to the local newspapers, it would aid materially in educating the public to the real objects we are seeking, besides it would eliminate for all time the vulgar and sarcastic press notices which so often grace the announcement of our meetings. I am aware that many communities have newspapers whose editors are sufficiently alive to the progress of the times to give us proper and considerate attention, but there is still much to be accomplished along this line.

Where the membership is widely scattered, one good, well attended meeting annually would be much better than several of little interest or attendance. The meeting time should be set so as not to conflict in any way with the meeting of this society, or of any adjacent society where the members may wish to attend both meetings.

An occasional union meeting of two or more component societies could be made a mutual affair, and would be most profitable to all.

We believe that those members of other societies convenient of access to a meeting place should be especially invited, as nothing would so tend to ginger up a local society as to have enthusiastic and live members from other societies come and participate in our proceedings.

It should be the privilege and pleasure of a member to attend, when possible, the meetings of adjacent societies, but he should always swear his allegiance first to his own society.

In arranging both the essay and clinic program it would be well to invite some not members of the local society to participate, but we should not lose sight of the fact that the local should train and develop its own members.

Especially should the young man and new member be encouraged to participate and be allotted tasks to do, as nothing will so stimulate his interest as to know he is responsible for the performance of some work connected with the welfare of the society. By this means of assigning tasks, the modest and retiring man can be put to work, and can often be made one of our most useful members.

In order to make any organization successful, there must be a willingness on the part of its members to undertake any work they may be called upon to do, with all the enthusiasm, endurance and action within them. He who acts from selfish motives or the hope of reward other than of having done his task, and of having put the best there is in him into its performance, can be but transiently successful in any undertaking.

I do not believe the members should always be expected to give original essays or clinics, and it is certainly true that no one derives as much good from either as the essayist or clinician himself. This is part of the training which the local societies can do for us, and here all can have an equal chance.

I believe there are two topics, ethics and fees, which should be perennial—not but that they should grow tiresome to some, but their importance is such that they should always be kept before us.

This state society has done a very great amount of good along ethical lines, bringing its members together and fostering and encouraging friendships and mutual efforts, but we still have many "ethical advertisers"—those with a desire for newspaper notoriety or with de luxe signs, varying in size and conspicuousness, closely patterned after the charlatan idea, and while I am sure they have persisted in this thoughtlessly, it behooves us to each one ascertain whether we are "guilty" or "not guilty" of being an "ethical advertiser"—and act accordingly.

The pleasure we derive from the practice of dentistry depends so very much upon the ethical relationship existing between us that it at all times deserves and should have our earnest consideration.

The question of fees I believe to be a very important one, especially in certain sections of the state. The necessity for a just and equitable compensation for services rendered is evident to all. Without it conscience becomes dwarfed, ideals vanish and ambition atrophies.

The dentist without conscience, ideals or ambition is not a fit member of this society, and so we must constantly aim to keep this fact emphatically before our membership.

It is needless to mention the value of the society banquets, and other social features. We all realize what a part these can be made to serve in keeping warm and true the friendship of our members.

An attractive and profitable program having been arranged, the members should be notified long enough in advance of the meeting time, and should receive notices often enough, and of such a nature that the coming meeting shall be kept constantly before them. No matter how splendid the program prepared, there are always those whose attention must constantly be called to it—"lest they forget"—and here is where I believe thoroughly in "advertising." A good program deserves and can stand lots of publicity—and this is one of our best means of working up interest and enthusiasm in our societies.

Our societies could, with much profit and pleasure, take up different lines of study work. Meetings could be held exclusively to one subject, the society securing some one thoroughly qualified in this particular work to attend as demonstrator and special lecturer, the members themselves working under this direct supervision.

Such subjects as cavity preparation, casting inlays and bridges, scientific selection and anatomical arrangement of dentures, the proper administration of anaesthetics, and many other subjects could be thus handled, giving the members a real post-graduate course.

The expenses incurred could be divided among the participants, making a most economical and pleasant method of becoming familiar with all the late developments.

Another method of instilling interest into our meetings is the sending of various subjects or questions to a certain number whose duty it shall be to report on their assigned subject at the meeting.

In this way ten or twenty members may be put to work, in a modest way at first, and gradually advanced to other duties. It also adds to the interest as each man then feels a personal responsibility toward making the meeting a success.

The local society should be watchful of its territory and guard against its invasion by the illegal practitioner, reporting such cases to and coöperating with the State Dental Board. It is a great injustice to cast the blame on our state board for the existence of these parasites, and with our coöperation, where the members are willing to do their part, the state board is always ready and glad to assist in every way possible to see that our laws are properly enforced.

By stimulating the desires of its members the local can use its influence toward uplifting the profession as a whole, and directly and indirectly we could do much toward educating the public dentally.

Union meetings with our brothers, the physicians, would be of mutual benefit, and should aid greatly toward fostering a true appreciation of dentists and dentistry.

We should invite them to contribute to our program and occasionally one of our members return the favor.

Inviting the public to attend an open evening session, where some very practical subject, such as oral prophylaxis, would be considered, could be made to react to their benefit and our own.

If we desire to do our state society a service, it is necessary that we remain faithful and true to our local, for in this manner can most of us best aid her.

Let us then bestow our efforts and loyalty upon—

First—Our local society.

Second—Our state society.

Third—Our neighboring society.

As members of this society, appreciating the true functions and importance of the local societies composing it, let us all realize that in order to insure a live, progressive local society, the members must be individually and collectively imbued with *enthusiasm, endurance* and *action.*

THE PREPARATION OF THE MOUTH, IMPRESSION AND MODEL FOR THE SEATING OF BASE PLATES.*

BY J. A. BULLARD, D. D. S., CHICAGO.

Mr. President and Ladies and Gentlemen of the Chicago-Odontographic Society:

About a year ago, I had the pleasure of reading a short paper before this society on "Taking Impressions of the Mouth." What I have to offer tonight follows along the same line of thought, inasmuch as the chief object is to obtain as accurate an adaptation or seating of bases for artificial dentures as we can.

Prosthetic dentistry, or plate work, is fast becoming to mean to some the making of plates for edentulous mouths, or where but two or three teeth still remain in position.

It has been stated that this branch of dentistry has made no progress in the last twenty-five years, but when you come to look at it from the point of view that, as soon as some method is developed for supplying missing teeth other than by partial plates, it is taken away from prosthetic dentistry and called something else—as is the case with bridge work, or where we put some little hook or button or any means of support other than the clasp on a partial plate, it is then dignified by being called "removable bridgework" and put in a class by itself,—you can readily understand that prosthetic dentistry, instead of being a branch of dentistry, is a piece of the trunk with the branches pretty well cut away.

I wish to speak of those cases which depend upon the adhesion of a base plate to the tissues of the mouth to retain the set in position, and not upon springs, clasps, etc.

My remarks will apply more particularly to the upper jaw than the lower, and your attention will be called to a few conditions found in some mouths which need surgical attention before taking the impression.

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*Read before the Chicago-Odontographic Society, May 19, 1908.

Where there has been the extraction of a number of teeth, the process, if broken, should be looked after; removing sharp, rough edges and loose pieces, and the gum made as smooth as may be.

Sometimes in extracting anterior teeth, especially the cuspids, the process is thin over the root and adherent to it; in springing the tooth out to loosen it the process is broken, the soft tissue under the lip is torn loose from its attachment and drops down, and if allowed to heal in this position will shorten the action of the lip and make a very low rim to the plate. This tissue should be put back in place and retained by two or three sutures until healed; or if a temporary plate is made it will hold it in place. Where the tissues have been lacerated and allowed to heal into the socket of a tooth so the attachment of the buccal tissue is brought close to the ridge, it should be cut loose and packed away until healed.

Another condition in some mouths is that produced by wearing a full upper plate and only the natural anterior teeth below to occlude with it. The constant pressure and movement of the plate causes the anterior process to absorb away, leaving a ridge of soft tissue, which rolls around under pressure, and a satisfactory plate cannot be made over it. This tissue should be removed, and when the surface has healed the result will be a ridge of something like uniform density to work upon.

Just a word in regard to the absorption of the alveolar ridge and the length of time a plate should be worn.

We do not know why the alveolus is absorbed away so excessively in some cases and not in others, but a very accurate opinion can be formed as to whether it is going to take place or not before the teeth are gone. To cite two extreme cases; first, where the process is very dense and heavy, the teeth having long roots and short crowns, but have been lost through caries, with, however, no diseased condition of the roots and no tendency toward pyorrhea; if there is not too much damage done in extracting, the process in these cases will not absorb away excessively, but will change very slowly through life, and the soft tissue will remain hard and dense over it.

On the other hand, where a case presents with the process thin and frail and perforated by pus tracts, or where the teeth are being lost from advanced stages of pyorrhea, there will be great change after the teeth are gone and the gums healed. The remaining process will rapidly absorb, and in a few years almost entirely disappear.

A plate made for the first case, six months after extraction, might be worn without much discomfort for ten or fifteen years; while for the second case the plate would have to be changed every two or three years and would need considerable attention in trimming the rims and edges to avoid injury to the soft tissue as the ridge absorbs.

Generally speaking, plates should not be worn over five or six years. Oftentimes a patient will wear a plate too long after the ridge has absorbed away, and the sharp edge of the plate has cut a series of grooves and the soft tissue will hang in flaps under the lip. These flaps should be cut away, the rim of the old plate cut down and covered with antiseptic gauze to keep the freshened surfaces of the lip and ridge from healing together; and in two weeks you can make a plate which will be comfortable and useful.

In a few cases the extreme posterior ridge of the upper will be dense gum tissue, as large as your little finger, and will roll from side to side under pressure. If removed, the plate will set with much more stability.

After having the mouth in as favorable a condition as possible, our efforts pass on to the treatment of the impression and model, with the object in view of obtaining an equalization of the pressure of the plate against the tissues upon which it rests.

If we had a material from which a model could be produced that absolutely represented the mouth, the necessity of relief in the impression and upon the model would be reduced to a minimum.

The reasons for the required relief of the palate of an upper plate are: First, running through the palate on the median line usually there is a hard, bony ridge. This ridge varies in size from being nearly invisible to the eye (but can be felt by the finger), to a large, bony formation, perhaps three-quarters of an inch across. This area of the mouth being hard and the gum tissue soft, it is necessary to construct the plate so that it may rest harder on the gum tissue than in the center of the palate.

Second, the hard structure of the palate does not change in form but slightly during the plate-wearing period of life, while the alveolar ridge absorbs away. The relief allows the plate to follow this absorption of the ridge and still avoid heavy pressure in the palate, and renders the plate useful for a longer time.

The third reason for relief is to allow for the inaccuracy of the plaster model caused by the expansion of the plaster of the impression and model in setting.

The lateral expansion of the plaster of the impression is prevented by the rim of the tray, so it expands in line of least resistance, causing an arching of the palate. The plaster of the model expands in the same line, causing a second lifting of the palate. So the difference in the arch of the model and arch of the mouth is that caused by the two mixes of plaster of paris.

This has been proven by experiments carried on by various members of the profession, including Dr. S. J. Spence of Chattanooga, Tenn., and Dr. Prothero of our city has done some very positive work along this line.

The expansion of plaster was first called to my attention by Dr. E. J. Perry, several years ago. He was very positive about it, as he had just repaired a china doll, whose head had been broken off at the neck, by filling the hollow of the head and neck with plaster and placing the parts in position. The repair was all right, but the fragile skull could not stand the expansion of its plaster brains, and opened up in various cracks.

So this third cause calls for the relief of the palate to bring the plate back to the form of the mouth.

Another reason for relief of the palate where considerable absorption has taken place is to prevent the pressure of the base upon the anterior palatine nerves as they come through the foramen just back of the anterior alveolar ridge. Pressure upon these nerves may cause severe pain. Quoting Dr. T. W. Brophy, "This pressure and irritation caused by the base plate resting upon these nerves is a frequent cause of neuroma and may necessitate an operation."

The same condition may exist where there has been extreme absorption of the process of the mandible. The mental foramen is brought within the area covered by the lower denture, and pressure upon the mental branch of the inferior dental nerve will cause great pain. The plate will have to be carefully trimmed at these points.

In the majority of cases the relief of the plate in the palate can best be accomplished by scraping the impression, and this calls for as much good judgment as any step in the construction of the base.

The hard ridge through the center of the palate should be scraped out its entire length to about one-twelfth of an inch in depth, starting about three-eighths of an inch inside the posterior plate line and gradually deepening the relief to avoid sharp angles, and working forward through the impression to about three-eighths of an inch of the anterior ridge, gradually shading it out. The width of this relief will be determined by the width of the hard ridge through the palate. It will be widest at its posterior part and taper forward. A second relief is scraped on each side of the center one and carried forward and blended with it. This gives three saucer-shaped depressions in the plate. The center relieves the pressure in the center of the palate, and the ones on each side give relief and suction. The little ridges between the center and sides are scraped some, but not removed entirely to open the relief up into one chamber, so the plate feels as though it did not touch the roof of the mouth. The old form of air or suction chamber, only partially relieves the pressure, as the plate rests hard on the palate, both anteriorly and posteriorly to it.

This scraping of the impression in the palate is all the work which is necessary to be done upon it. In a few cases where we have the large, bony formation in the palate, I use tin foil relief on the model, instead of scraping the impression, placing three, four or five thicknesses of No. 60 tin foil over the required area, as the whole palate is hard and needs uniform relief.

The separating material used is of considerable importance, and I have never seen anything for this purpose to equal sandarac varnish. The impression may be stained with shellac, and then apply the sandarac, or by using a little indellible lead, which should be scraped into the sandarac and makes it blue, so that, in separating, the line between the model and impression may be seen and it gives a model with a hard, glassy surface. Care should be used to remove the excess varnish or other material used for the purpose. After applying the fluid to the surface of the impression with a camel's hair brush, wind a little cotton around a toothpick and wipe the excess out of every little depression of the rugae, or any little point on the ridge: for if these are filled with varnish it is the same as scraping the model in such places, and the plate will bear hard upon them.

Usually it is not necessary to do any work upon the model to equalize the pressure, only to relieve or scrape it around the plate line, especially across the posterior line, so that the plate shall set up closely to the tissue, and will not leak.

In some mouths the ridge is very uneven, caused by teeth having been extracted at different times. Where they have been out the longest, the gum may be soft and spongy; and where the extraction has been of more recent date, the process is hard and prominent.

To even up the pressure on the ridge and avoid the rocking of the base over the hard points, scrape the soft ridge on the model, and cover the hard points with tin foil.

All mouths vary, and each has to be treated according to its peculiarities. Careful study, good judgment and attention to all the little details is necessary.

One of the great features of seating the base plate is to anatomically grind and arrange the teeth so as not to unseat it.

Dr. Prothero went into this subject so extensively in his paper that it is not necessary to discuss it here, except to say if there are no other teeth in the set ground, grind the four cuspid teeth sufficiently to take the points off, so they will not knock the plate loose on the lateral movement of the lower jaw.

COMMENTS ON GENERAL PRACTICE.*

BY W. E. TENNANT, D. D. S., FOND DU LAC, WIS.

Throughout the whole field of dentistry, and in the very essentials of its practice, there is little that seems to be settled or agreed upon; and until such means as the appointment of an international commission (as has been suggested) is selected to recommend to our colleges, and enforce therein a uniform teaching, a wide difference in ideas and methods must be expected.

Of course, many good men differ in opinion, and to any one that has subscribed and read two or more of our various dental journals this is very apparent, as we find articles by men that perhaps stand equally high in the esteem of their fellow practitioners, who seem to disagree entirely upon standard methods of practice. Therefore, I may have some small excuse today for giving you the results of a few ideas, clippings, jottings (not all original by any means) and a few formulae, that perhaps will give you some small benefit.

A noted surgeon once said, "We are often astonished to find that the unexpected happens when we least expect it; and many times we learn things on investigation that were never dreamed of before—even simple things that are, however, fundamental. It took me fifteen years of close application in cleft palate operations before I learned that the upper jaw is as much wider than the lower as the space between the edges of the fissure—and yet it was before me all the time."

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*Read before the Fox River Valley Dental Society.

Extracting nowadays is perhaps a diminishing phase of our work, yet there is still too much of it done. Some patients presume to dictate to us our duty; and many of us are too often swayed by their judgment, which is usually poor.

A tooth with a small cavity, or perhaps a root that needs a crown, will give trouble. The dentist that extracts in these cases does a double injustice; one to himself and a greater one to the patient. Just simply refuse to extract these unnecessary cases, and if some one else does it, you won't have the crime laid at your door at any rate. And while I am saying something about extracting let me say that the man that extracts a tooth nowadays that is good enough to be filled or crowned without first using his utmost efforts and intelligence to save that tooth by telling the patient his mistake, is not a whole dentist at all—in fact, he is just a "tooth carpenter," and is not living up to the twentieth century ideal in any sense of the word.

Crown work should be advocated, when indicated, also inlay work—many patients leave dentists' hands in every city that need and are willing to pay for this kind of service, but it is not recommended to them or even referred to. Surely we are the ones that should know the business and we should suggest and advise these things. How are we to expect to do this class of work if we do not?

Many times the anterior teeth can be made to look at least 95 per cent better by grinding off the rough and sharp and ragged edges and patients will be surprised at the radical change and wonder why it was not suggested to them before.

Some people expect because we have done work for them at some previous date that we are forever going to keep that tooth or those teeth in good condition, and if a filling fails after a reasonable length of time or it needs treating, they assume we should do it gratis. This is absurd and we should refuse to guarantee to replace a filling after one year, and even that sometimes is foolish. A physician does not guarantee to keep you well, neither should a dentist guarantee to everlastingly keep a tooth comfortable just because he has operated upon it previously.

We as a profession are expected to do more for less money than any other, and I for one think it high time there is a change instilled into the minds of these people and as a society I would be glad to have a resolution introduced to the effect that we get paid for our services every time with no exceptions but one—the case where it is very evident that poor service was rendered (that is, below the average). We can not always give the best of service and because we do not it is no reason why we should not expect a fee. If we do an average service that is all that any one of us can expect to do, therefore charge for it every time.

Many of us never advise our patients to return for examination semi-annually or perhaps earlier if necessary. These patients come back to us in, say, three or four years a sight to behold, and the work in which we took so much pride and thought was ideal is a mass of ruins; and the patient draws the conclusions that dentistry is only a very "temporary affair" after all.

Then we are too prone to get a dollar for a "cheap job" of "cleaning" when perhaps if we had done the work properly it would have taken us three times the amount of time spent in doing the service and we should charge just three times the fee that was charged. I have seen patients (and many of them) turned away from good operators, and the deposits on the teeth had not been touched, and the stains not all removed and yet they had paid their little dollar and been told that they had a real case of "cleaning" performed.

We often wonder why some people do not come to us, or why we are not more busy, when, if the truth is known, we have the reputation of being "barbarous" in our treatment, or lack a little of the sympathetic feeling that is appreciated by us, while we are in the dental chair. This carelessness and awkwardness keeps away about 70 per cent of the people from us and if we can do a little sum in arithmetic we can see that our annual income is curtailed in like proportion. To the man "without a heart" let me say, sit in the chair yourself and take a little of the same medicine, in doses the size that you administer about every third day, and I predict that between times a small heart will grow within your calloused body that will last for forty-eight hours at least.

Did you every stop to think that the dedicuous teeth are there for a purpose, and not to be extracted as soon as they start to give trouble? You all know that the majority of irregularities are caused by extracting these teeth too soon (a few cases too late) and yet it is done every day.

A prominent dentist was on a vacation and while away his son, about eight years old, was compelled to call on another dentist from trouble in an aching cuspid. The dentist extracted that cuspid and you can imagine what an injury he inflicted upon the boy. When the father returned home the deed was done, but I'll venture to say that that man has never committed that crime since.

Another thing—never deceive a child; if you are going to cause pain, tell them so; and they, if ordinary children, will be able to bear it better. First, get the confidence of the child and keep it by not deceiving them and they will be your patients as long as you are in the community.

And in regulating I have often extracted where I felt that I could not regulate without this method—but truly, gentlemen, the more of this work I do, the more I am convinced that never should we extract in orthodontia.

William G. Law says, "Extraction has no place in modern orthodontia. We do not even admit of rare exceptions, as was done by us a few years ago. The loss of teeth makes the treatment of these cases more difficult and a failure from the standpoint of occlusion and facial balance, because the arches are so constructed that the removal of one tooth ruins the possibility of that mutual support which each tooth renders to its negihbor, and to the entire denture, which under conditions of normal occlusion always exists."

One other thing that is often needlessly done is the application of ligatures. While there may be exceptional cases that require a ligature, I will venture the assertion that 99 out of every 100 that are applied are unnecessary, and if there is any one thing that injures the gingivae and causes intense pain it is this indiscriminate application of this pernicious method.

For sensitive cavities try a saturated solution of potassium carbonate in glycerine, or a saturated solution of zinc chloride in alcohol; both working very well.

The Buckley alterative treatment for abscess or acute pericementitis caused from ptomaines being forced through the apex of the root is as follows:

℞ Potassii iodidi,........................ʒj
Syrupi sarsaparillæ comp.................℥iij

Signa—Take a teaspoonful three times a day after meals—dose to be added to a wine glass of water.

You will find it is very good.

A good separating fluid may be made by making a saturated solution of paraffine in gasoline.

If you have trouble in plates being porous, place above the water line (using very little water) upon a suitable support and the trouble will be obviated.

Try trichloretic acid 50 per cent for melting away the gum overlying third molars, being careful not to let it get into the throat or upon the cheek, by the use of cottonoid rolls; and perhaps if the flap is large enough inject cocaine and cut it away first, which will relieve materially these painful cases.

In Chicago, at a recent clinic, Dr. Keefe demonstrated that any pain arising from the fifth nerve could be temporarily stopped by injecting into the nostril from a watch case atomizer, two or three injections of equal parts of water and alcohol. The pain would disappear in from ten to fifteen seconds.

A free application of campho-phenique after setting a crown will relieve the pain.

In repairing plates dry pack with vulcanizable gutta percha and save time and trouble.

In syringing the mouth do not interfere with the muscles and the water will not run out at the corners.

A little beeswax and resin will prevent the engine cord from slipping.

In applying arsenic to a cavity that extends below the gum, moisten the cavity with eucalyptol, then completely fill with temporary stopping—then drill a hole through to the point where you wish to make the application, cover over the arsenic, closing the opening with more gutta percha and there is no danger of poisoning the gum tissues.

Care for the pregnant woman's teeth and don't be foolish and tell her her condition will not warrant it—an aching tooth will give her far more nervous trouble and worry than you will in attending to the disease.

Remember that oil of cassia will discolor teeth and that you do not need it in the office at all.

Also that extracting and replanting has cured many an abscess where all other means have failed.

The sodium dioxide used for bleaching purposes must be pure—and there are well known tests to determine the purity of the drug.

Boiling instruments is the best means of sterilizing them (add 5 per cent sodium carbonate to the water to prevent rust) and this should be done more often than the average dentist in the habit of doing. Think of using instruments contaminated with blood, mucus, and saliva for several patients, before they are sterilized. It is a slovenly method, to say the least.

For the putrescent pulp Buckley's formalin and tricresol, equal parts, is the best thing in my hands, but A. W. Harlan claims equally as good results with mono-chloracetic acid, and says it will bleach the tooth at the same time if discolored.

Lactic acid cleans the saliva tube. A 20 per cent solution of argyrol injected into the pus pockets in pyorrhea will clean things up materially.

For supporting a sore tooth while drilling, make a splint of modeling compound for both the buccal and lingual sides. This will hold steady and prevent pain from the jar of the bur.

For the weeping canal seal in a dressing from the bottle containing thymol gr. iii, menthol gr. iii, eucalyptol drachms i; (not encalytus oil, but eucalyptol).

A good local anesthetic formula is as follows:

℞ Cocaine hydro. .... gr. vj.
Acidi carbolici .... Mij
Aquæ menthæ piperitæ .... ʒj

The peppermint water as a vehicle will mask the taste of the cocain and the solution will keep much longer than if made from ordinary distilled water. 19 m. of this solution contain ¼ gr. of the alkaloid; the amount we are justified in injecting into the system at one time. Simply dry out the hypodermic needle with hot air after boiling and it will not need any wire inserted in the opening.

Another thing is removing the arsenic from a tooth and filling the canals immediately. Even if the pulp is dead and can be removed painlessly, that is no sign that the root should be filled; that canal should be thoroughly sterilized before filling, as I hold that is next to impossible to completely sterilize in a few moments the tubuli of that tooth—and if you chance to open into that tooth a year or so later you will find it in a bad smelling condition.

One more thought—the matrix should be used always in proximal cavities in the posterior teeth whether it is gold or amalgam. You can pack your material much better, get a denser filling, contour it better, keep it away from the gum margin, and the filling is half polished when you remove the matrix. Particularly is this true with amalgam; the tendency is to pack the interproximal space full of the material; and I regret to say that many times this is left in this position, making, when hard, a constant irritation to the gum margin and a bad and slovenly operation at the best.

Dr. A. C. Hewitt of Chicago has found almost a panacea for all ills that befall to the lot of a dentist to treat, in echafolta, and even advises him to keep it within reach at all times, wash the razor with it, apply it to the face after shaving, etc. I refer you to his article in the last few issues of The Dental Review and it will interest you, I am sure.

The practice of dentistry is a trying, nerve-racking work at the best and if there is a class of people that need the road made a trifle more smooth, it is our humble selves; therefore, this is my sole excuse for presenting a paper of this nature. Let us hope that Dr. Hewitt will teach us how to soothe our wounds and allay the pain with this wonderful drug.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FOURTH ANNUAL MEETING, SPRINGFIELD, MAY, 1908.

DISCUSSION ON THE PAPER BY DR. COOK.

Dr. J. E. Hinkins of Chicago:

The paper of Dr. Cook embodies a great deal of work, and deserves the commendation of all dentists. I have been familiar with his work for some time, and I watched him at work in preparing this paper. But, understand me, gentlemen, I do not class myself as a bacteriologist with Dr. Cook; consequently I am not able to discuss his conclusions with reference to pathological and bacteriological fermentations. But, it seems to me, there are other conditions which play as important a part in pulp decomposition as bacteria, and that comes from the chemical, enzymic, or catalytic action, or a number of other things which come under the head of biological and physiological chemistry, and so I shall differ some with the essayist in that regard. The decomposition of tissue from bacteria is quite different from the decomposition of tissue by chemical means. The fact has been brought out that the agents referred to by Dr. Cook are quite different in their action in the test-tube and in the teeth. An agent does not always give as good results as one would expect, but the variation is found in the fact that the agent is neutralized by the products of bacterial action on the tissues. It was further pointed out that agents do not always produce the same conditions that we naturally would expect of them.

The saliva contains some acids under normal conditions; it has been shown that nuclein (16), leucin, xanthin, and volatile fatty acids, acid phosphates, bicarbonates and sulphocyanic acid are present in small quantities. The large amount of acid present in the salivas may be due to an unusual activity of the enzymes of the saliva, or to the presence of a large amount of substances, secreted by the salivary glands, which can be very readily hydrolized by these enzymes. On the other hand, it may be that under the abnormal conditions undoubtedly present the glands can exercise a selective secretion of acid salts from the blood, or that within these glands themselves there is formed, abnormally, a larger amount of acids than usual. Our experiments, of course, do not give any evidence on this. The amounts of these organic acids probably vary with change of health, and change of age, and certainly vary greatly in individuals. When we consider that in abnormal constitutional conditions this amount may be greatly increased, it is not surprising that such conditions are more marked in some individuals than in others.

In order to try to secure evidence as to whether the enzymes of the saliva can hydrolize any compounds rapidly enough to account for the acidity of the saliva we subjected triacetyl glucose, a substance hydrolized very readily indeed, to the action of a large number of "commercial" enzymes. These commercial preparations are only weakly active, when compared with the freshly prepared extracts from the glands, but on the other hand triacetyl glucose is probably far more readily hydrolyzed than any of the compounds secreted by the salivary and mucous glands. The weakness of the hydrolyzing power of our commercial enzymes, compared with the enzymes actually in the saliva, may be counterbalanced by the more ready hydrolysis of such a substance as the triacetyl glucose. We expect to begin experiments in which the rapidity of the hydrolysis of triacetyl glucose, and other substances, by the fresh saliva can be measured. We do not claim these experiments to be more than very roughly qualitative in value, but they are not without interest. Every enzyme examined was able to hydrolyze triacetyl glucose into acetic acid and glucose. Pancreatin and ptyalin were very active, whereas others like emulsin and diastase were not so active.

In order to show the varying activity of these different commercial enzymes, we (17) present a short table of the determinations of the acidity produced by different enzymes when acting upon a triacetyl glucose solution, which was at first N/42.50 acid, and which was kept sterile by means of toluene and thymol.

ENZYME.	TIME.	STRENGTH OF ACID SOLUTION.
Pancreatin	10 days	N/21
Amylopsin	10 "	N/25
Emulsin	11 "	N/40.5
Maltase	14 "	N/22.2
Diastase	12 "	N/33
Takadiastase	7 "	N/27

From these experiments one thing is clear; unless enzymes of the saliva in nascent condition, so to speak, act far more rapidly on hydrolyzable products in the saliva than we have cause to suspect, this hydrolysis cannot be the source of the acids found in the saliva. The saliva is present in the glands and the mouth too short a time to allow so much to be produced. It may be that the enzymes, at the moment of formation, are far more active or that there are products in the cells of the salivary glands that are practically instantly hydrolyzed under the existing conditions. They are given to show that enzymes can produce enough acid to dissolve cements or tooth structure. If then the acidity of the saliva is due to the activity of enzymes, it is to be expected that these acid solutions would break up chemically. But as pointed out above, the source of the acids in the saliva may not have any connection with the activity of the enzymes of the saliva; the acids may be produced in other ways, to be determined in the future.

In order to establish a definite connection between the activity of the enzymes and the failure of cement fillings, we instituted the following experiments: a neutral peptone solution of triacetyl glucose was subjected to the action of commercial pancreatin and ptyalin. The acidity increased regularly and was measured from time to time. The following experiments show how large is the production of acids by these enzymes: Glucose (40 grams) and acetic anhydride (120 grams) were heated on a water-bath half an hour, to dissolve the glucose. The solution was then poured into 250 cc. of hot water, evaporated to about one-third of its original volume, neutralized with N/KOH solution and diluted to 1 litre. Two hundred and fifty cc. of this solution, together with 50 cc. of 1 per cent bouillon, were treated with 5 grams of ptyalin or pancreatin. The liquids were placed in an ice-box, a check was kept on the original triacetyl glucose bouillon solution and all of them were maintained sterile by means of toluene and thymol.

After the solutions were inoculated with the culture, they were kept at a constant temperature of 37° C., and a titration of the acid was made each twenty-four hours. In some cases quite a large amount of gas, probably CO, was formed, and hence in all titrations we made duplicates. The first was titrated in the cold; the second was brought to boiling to eliminate any CO, and cooled and titrated. Generally the amount of acid in the second case was smaller, but in some cases there was a "decided increase in the amount of acid upon boiling." Acree (10—and Hinkins), in noting this phenomenon as early as 1899 proposed the theory that the bacteria, or enzymes from them, bring about an ester formation from the sugar and organic acids present, or an amide formation from the organic acids and amino groups of the proteids, or their decomposition products. These esters or amides are neutral, but when boiled with water they could be saponified and there would consequently be more organic acid in the boiled solution to titrate against the alkali.

Since then Kastle (11) and Loevenhart, working on ethyl butyrate, and Acree (12) and Hinkins, working on triacetylglucose, have shown that certain enzymes cause a formation of these esters from the acid and alcohol, and also cause their hydrolysis in water solution. The enzymes seem to act as catalytic agents in affecting these reversible reactions, and doubtless bring about equilibrium in the system. The work of Buchner (13) and of Stoklasa (14) has made it very probable that enzymes of certain bacteria are also very active catalytic agents.

Kastle and Leavenhart have shown that lipase, the enzyme of the pig stomach, has the power to break fatty acids into free fatty acids and glycerine.

Acree and Hinkins, working on triacetylglucose, have shown that enzymes break up the esters from the acid in alcohol into glucose and acetic acid, or they will reverse and work either way. Young and Hurst have shown that ptyalin will break up the sodium and potassium salts into acid phosphates. Here is where Dr. Buckley's chemical decomposition of the pulp comes in. You are all familiar with his work.

Dr. E. L. York showed you in a paper read before this society ten years ago that 95 per cent carbolic acid would diffuse through the dentin of a tooth that had contained a putrescent pulp, in from four to eight hours.

ANTISEPTICS.

And right here comes in another very interesting problem, and that is this: the action of toluene and thymol have the power to arrest bacterial fermentation and not to affect the enzymatic, hydrolytic, catalytic or osmotic action. I believe this is an accepted fact among biological and physiological chemists.

Dr. John P. Buckley.

[Dr. Buckley spoke with a copy of Dr. Cook's paper in his hand, to which he frequently referred, and the stenographer, supposing that he was reading a written discussion, took no notes. Dr. Buckley has been unable since the meeting to find time to write out his remarks, which are therefore necessarily omitted.—Editor.]

Dr. G. V. Black, of Chicago:

Mr. President: I have been out of the active study of this subject now for some ten years; neither have I followed carefully the improvements that have been made in chemical terminology, or the recent discoveries, and I could not take the time, to prepare specially for the discussion of this paper. But as the discussion has gone on, I have become more and more interested in the presentation of the subject—which every one should follow as closely as his capability along these lines will allow him, for these examinations and the discussions following them must be the basis of our future action in the management of the putrefactive decomposition that we meet with affecting pathologically our work in the mouth. We will not arrive at the best remedies empirically, but we will have to base our remedial practice upon the studies that are made in the test tube and elsewhere in determining the nature of these processes. So I have followed this subject from the beginning of the development of the present forms of explanation. I recall the old form of explanation when all of these splittings up, so called, were attributed to molecular motion, and the wonderful explanations that were given by the great German chemist, Baron Liebig, and the attack of these by the great French bacteriologist Pasteur, and the war that ensued between them, and my especial interest in it dates from the observations and discussions of those great men. This simple splitting up that has been displayed upon the blackboard, or the hydrolysis or the oxidation that has been spoken of, are only terms used to cover the end products and do not represent the processes that take place. I want you to understand that these are correct and represent correctly the end products of a physiological process that is very much more complex than would seem or that has been written on the blackboard. We take food into our bodies. It undergoes the processes of digestion. It meets with different enzymes and is dissolved, broken down, is absorbed, passed into the body, into the cell, and becomes tissue. It performs its office as tissue, breaks down again, and we have carbon dioxide delivered through the lungs, and urea delivered through the urinary system as end products. Now, as alcohol and carbonic acid represent the end products in the alcoholic fermentation, so do urea and carbonic acid represent the end products in the human body. All of these processes are brought about first, by digestion, the action of the enzyme of the organism upon this material, the absorption of that material into the structure of the cell, the giving out of the waste product again, and with the results here named as the end products. That is what we are dealing with in the roots of teeth. There are many fermentations, and putrefactive fermentation is only one of them, and our knowledge of putrefactive fermentation is only partially developed. It is different under different conditions.

There is only one thing more I wish to say, and that may be disposed of in a few words. There is no doubt whatever but that formalin will stop these processes. There are a number of agents that will stop them. They will do it, many of them, quickly or slowly accordingly as they are applied. The stopping of these processes in the roots of teeth is not difficult. The difficult process is the healing of the tissue beyond the ends of the roots. Now, gentlemen, when I use an agent in the roots of teeth I want it temporarily, at least, to stop these processes. I want, first, to drain the root canal and get rid of as much as I can mechanically. I want to stop these processes from going on temporarily; I may not stop them permanently, because we will do that later in a mechanical way. But the thing I am most anxious about is the inflammatory process that may have started about the apex of that root, and I want to give that tissue the best chance to heal. For that reason I want to use an agent that is the least irritant to the animal cell of any that will control temporarily these processes in the root of a tooth. From that standpoint, therefore, we would never use formalin because formalin is as severe in its action upon the animal cell as it is upon the vegetable cell. It is a terrific irritant, and the cases of drooling of serum following the use of that remedy come so often under my view, that I feel it is a very bad agent to use. Mind you, I do not attribute every case of drooling of serum to the use of formalin, but the idea is this, that we can control it with an agent that is less irritating, and let us do it.

Dr. Cook (closing the discussion):

In the application of bacteria to putrefaction, Dr. Black made the main point, that in biological chemistry no essential difference or distinction is made between fermentation and putrefaction. They are all processes of decomposition. Their constant tendency is to break down organic substances into lower chemical molecular forms. When we get back to carbon dioxide we have a low chemical form; when we get down to the sugars we have got a low chemical form in comparison with the proteid molecule that contains over twelve hundred atoms of carbon, and about eighteen hundred atoms of hydrogen or thereabouts.

Referring to the process of pulp decomposition, we know that we must have a certain amount of fat, carbohydrates, and proteids in order to make up a living substance. We have them in the cell of lowest form of plant life. We have them in the highest organized structure of the human brain, but the fats you find in tissue cells like that of the pulp, are not in very large amounts. The carbohydrates are not present in very large amounts, consequently we could not find them in the quantity that we had of the tissue for the determination, and we did not volatilize it. We took a certain amount of the substances in the various stages of the process of decomposition, and we analyzed that, and I may say here, I did not make the analyses myself; I am not sufficiently expert as a chemist to do that, but this work was done at the University of Chicago, and I am indebted very much to Drs. S. A. and A. P. Mathews, one of whom is a pharmacologist, and the other a physiological chemist of considerable note in the United States as an investigator along these lines.

There was one unfortunate thing in connection with the work of this paper that handicapped me very much in its preparation, namely, the sickness and death of my brother.

It would be useless for me to discuss any further the tables and the methods I used. I may say, however, the gases were collected only as gases. Some of the products of decomposition were found in test tubes earlier than they were being formed in the tooth substance in the same way. There is a considerable difference, and that is one of the points I hoped I might be able to bring out clearly in my paper, that the decomposition of this substance differed materially in the test tube and in a tooth out of the mouth, and if this difference is so great, you can readily see how much greater the difference would be in a tooth in the mouth and in a test tube.

The experiments I have described are for the purpose of helping, if possible, to elucidate some of the agents that we may use. If I were to detail all these experiments and the ins and outs of my work and present them to you, it would take a week to do so. It is a long and tedious process. The work covers about ten years off and on, reading and studying.

DISCUSSION OF THE PAPER OF DR. HOOD.

Dr. C. R. Lawrence, of Bethany:

Dr. Hood's excellent paper contains many valuable suggestions and ideas, but there are one or two in particular that appeal to me as worthy of receiving some attention by this society. He has pointed out to us the value of organization and the opportunity is before us for action along some lines. Now, along what lines shall this action be, is a question that confronts us at this time. In our local dental society (Macon-Moultrie) which is the best local society in the state. it has been said by some of our members that we have almost written ourselves out and about all we can do now is to rehash some of the subjects we have already had before us for discussion. If this state of affairs is brought about, it seems to me, we are going to lose a great deal of the enduring enthusiasm which Dr. Hood has pointed out to us as being essential to our success. The backbone of this enduring enthusiasm has got to be a better scientific knowledge of dentistry. Therefore, it seems necessary that the state society should take some action along these lines, and in this way we can keep each individual member interested, or. at least, give him something to think about, and carry on our work more successfully than we have done in the past. It is true, that some of the local societies are taking up this matter of study work, but such an important work as this needs to have some system. Some of our local societies have a surplus of energy and ability, while others are lacking in it, and this being the case, the stronger should help the weaker. This is one of the greatest advantages of a dental organization. I have attended quite a few dental meetings, but never in my life have I seen so much interest manifested and attention paid to scientific dentistry as I have at this meeting. The meeting we had Tuesday night was simply marvelous. Hardly any one left the room up to the time we closed the session, at eleven o'clock. I had the pleasure of reading a paper before this society about one year ago along these lines and at that time made some suggestions, but it seemed as though the time was not ripe to take them up, but at this time there is a great deal more enthusiasm being displayed regarding this work. Since last year I have read two excellent editorials touching on this matter, one by Dr. C. N. Johnson, calling attention to the necessity for an endowment for dental research work. The other was by Dr. Geo. W. Cook, calling attention to the desirability of research men getting together and comparing notes and centralizing their work more. I hope that something of this kind will be started at this meeting. It is one of the best things we can do to get our local organizations in a better running order and keep the members interested in the work.

Dr. J. W. Ritter, of Charleston:

I have always felt that the essayist was well posted on the subject of our state society as a whole, as I know that he has had considerable experience in the conduct of local society affairs. Theoretically, his paper is a great success, but from a practical viewpoint, I cannot agree with all that he has said. He has given you a beautiful word picture of the conditions throughout this state, but he has failed to tell you of certain other conditions which exist in some local societies. There are hardly two local societies in this state that can be carried on alike. There are some whose members are widely separated, many of the districts containing several counties. The railroad facilities are poor. Many of the members have not seen or even heard of other members who live in their own district until they come together, for the first time, at their local meeting.

In speaking with a man at a certain local meeting which I attended nearly two years ago, he informed me that he was obliged to travel one hundred miles to attend that meeting; that it required the greater portion of two days to travel that distance, and it would require the same length of time for him to return to his home. The essayist tells us that we must not expect a man who is not interested in his local society meeting to display much concern regarding the success of the state meeting, all of which is very true, but how does he expect to bind the locals into a homogeneous organization which are compelled to depend upon less than 20 per cent of the active dentists in their districts for their membership, and that 20 per cent in some cases rent by internal discord, jealousy, strife and antagonism. There are local societies in this state where the discussion of the subject of fees, as suggested by the essayist, has caused an endless amount of strife and discord. The question arises in my mind if some clinicians who were sent to local meetings were of benefit to those meetings. The men who represent the state society are not always successful in making a judicious selection of the men to attend the local meetings. They do not always succeed in getting men to go who make promises to do so. Promises are made by a great many men only to be broken. There are other men who are able to adapt themselves to most any situation that may arise. How many of you men, who are invited by the state organization to attend a local meeting, consent to go? There are too many men not only in our local societies, but in our state meetings who are very willing to accept all the benefits to be derived from membership in a good dental society without doing any of the work, and generally those same men are the first to criticise the active working members whenever there comes a hitch in the proceedings.

There is one more point I wish to develop, and then I think I will have about all of the bile out of my system. The essayist has informed us that we have a class of men in our midst whom he designates as ethical advertisers. Now, whoever heard of an ethical man who was an advertiser, or the advertising man who is ethical? He excuses those men by saying that they persist in doing this thoughtlessly. I believe these men know just as well as you know or as I know that they are over-stepping the bounds of propriety.

Again, let me ask, what is the Illinois State Dental Society to do with these locals having as members men who could not be classed even by the elastic charity of the essayist as ethical advertisers. To be plain, last year there was a man, who enjoyed all the privileges of our local society, who has three signs on three large windows—the gold leaf letters of said signs measuring 8 or 10 inches in height and reading, "Best teeth, $8.00. Teeth without plates, etc." The members of that local society did not possess the moral stamina to report that case to the proper committee on state organization. There are men in that portion of this state who would make good live, active members—Men who would be a credit to the Illinois State Dental Society; men who are not advertisers or charlatans; who point to that case and say, "I suppose that your Illinois State Dental Society compels its members to cease advertising, or they are expelled."

Dr. Edmond Noyes, of Chicago:

I suppose in the case just referred to, if the members of the local society are not willing to take the responsibility and make the complaint, then the first fellow that happens to know the facts might be expected to do so. (Applause.) I do not want to give our young friend (Dr. Ritter) a very large dose of his own medicine, for he has done enough admirable work to entitle him to do some kicking. I will say that for him first, but he himself criticised the kickers, so I won't have that to do. I want to say this, however, in a general way, that the world is full of faults. It is full of difficulties and defects. It is full of imperfections. You can find them everywhere. You can find them in your house; you can find them in the church: you can find them in the legislature and in Congress. Notwithstanding all that, it is an optimistic world and entitled to be considered so, and what I want to get at is this: It is so easy to find something that is not right, and the temptation to do so is so great that almost every one of us ought to make it an invariable rule never to complain of anything unless we, at the same time, can suggest some betterment for it. Let us not get uncomfortably warm about the things that are not right unless we can see some way to make them a little better.

Dr. C. N. Johnson, of Chicago:

It may be true that in the re-organization of this society many undesirable men have come into it, but that is almost inevitable in any new movement. We have been anxious to get the members of the profession into this organization, and in so doing some of the local societies may have made mistakes. If a mistake has been made, it remains for us to see that it is rectified, and I believe there is a movement on foot now whereby these undesirable men may be made desirable or else forced out of the society.

I want to commend this paper as being most excellent. It is a paper which involves thought, and it gave me the impression that the essayist had a good conception of the situation. He has had something to do with local societies, and he sees the subject from that point of view. We who are in the state organization, and who are not associated with the component societies out of the large centers, have not a just conception of what is necessary in these local societies and, as Dr. Ritter has said, each local society has some local leaning, or local atmosphere, which must be reckoned with.

One thing the essayist said which impressed me was the necessity of having latent ability developed in our organizations. There are young men sitting on these benches today who can entertain you better than I can, or than any one who has been speaking before dental societies a long time. We have the latent ability to make dentistry a profession which will better serve the people. I have been something of a student of the men who have entertained the society in recent years, and it affords me pleasure to note, year after year, that we are having young men entertaining us and enlightening us, and most of these young men have had their training in these component societies.

Another thing which impressed me was his reference to an official press agent being necessary for our meetings. The worst reflection upon dentistry in the public mind is the average report of a dental meeting in the daily press by a reporter who tries to be funny. We have suffered that indignity long enough, and if the reporters cannot write a rational and dignified report for the enlightenment of the public we had better have one of our own members write such a report, giving the significant things of interest to the people, and I have no doubt that if such a report was written up in the right way any paper would be glad to publish it. The editor of a newspaper is not always responsible for the foolish things reporters say.

Dr. Lawrence gave the keynote of success in the local organizations when he said that his local society was the best in the state. That is the right spirit. Let every one who belongs to a local society feel proud enough to stand up and say that his society is the best, and there will be so much enthusiasm displayed in this society that the future of the profession in this state will be secure.

Dr. John P. Buckley, of Chicago:

Dr. Johnson has made part of my speech, but I feel I would not be doing my duty if I did not commend the essayist for this most excellent paper. If there is any one thing the society needs more than another, it is a stimulus along the lines that will result in keeping the society in its present active condition.

One of the things referred to in the paper was the idea of having the local members do some work. The most unfortunate thing that can befall a young man as he leaves college is to become so busy in his practice that he has no time to study. The idea suggested by the essayist of having what we may call study clubs, or the members in the local societies having certain questions submitted to them, is excellent, for it becomes necessary for them at the time of the meeting to reply to those questions. Things of that kind will cause the local members to study, and if this society did nothing else but stimulate more reading on the part of dentists it would accomplish a great work.

Now, Mr. President, I have been accused of a great many things in my life, but never of being a pessimist, but sir, I agree with Dr. Ritter in what he said about that large, gilt edge, $8.00 set of teeth. We must meet conditions as they are, and not as we would like to have them. I do not believe that this society, or any of its component societies, should be a reformatory school. I do not believe in being too particular, however. If a man has been an advertiser, if he is willing to stop and come in, I will forget the past, but I think it is wrong to keep in the ranks of our local society and through it the state society any man who has in his office three large windows, on each of which he has displayed the signs as explained by Dr. Ritter. I think it is the duty of Dr. Ritter to present the name of this man to the council. If he will tell me who the man is, I will present his name. Somebody ought to do so and take this matter in hand, and not be too ticklish on this subject.

Dr. J. W. Ritter, of Charlestown:

I wish to say in reference to the remarks made by Dr. Buckley, that I tried to induce the president of that society to take the matter up and he has failed to do it. I waited to report this matter to the council until after this paper was read.

Dr. Geo. D. Sitherwood, of Bloomington:

I belong to one of the best component societies in Illinois, the McLean County Dental Society. I was very glad indeed to hear this paper. I must confess that, at the beginning of the organization of the dentists of Illinois into a state body, through component societies, I was somewhat pessimistic. I was in doubt about the outcome, but I am no longer in doubt. To my mind, it is the greatest movement for organization among dentists that has even taken place in the world.

We have a very good society in McLean County, taking in part of Livingston, Ford, DeWitt, Mason, Tazewell and Woodford counties. At the beginning of our society we wasted a good deal of time in discussing ethics, fees, booklets, and that sort of thing. We are pretty nearly through with the discussion of those things now and have gotten down to dentistry. It took quite a while to accomplish this. While I agree with Dr. Ritter, that it is all right to take up the matter of ethics, yet we should not let it take up too much of our time. Do not get worried about it. Do not let it keep you awake at night. You can do that kind of thing quietly. That is the way we did in the McLean County Society. We had members who advertised, and we told them they must quit that sort of thing. They came into the society and quit advertising. They began advertising again, and we told them a second time to quit doing so, and if they did not, they would have to quit the society. They were dropped from the society, and it was done quietly and easily. Our society ran down a little after the first and second years. Now, what is necessary to keep up a society? I told you a moment ago that we must study dentistry. That is what these societies are for. You must have a competent program committee to get up a program that will interest the members. You must have a secretary who will send the members written notices. We have learned that the principal reason why a great many people attend Sunday schools and fraternal organizations is the personal work of the members, and so the personal work of the members in the component societies is worth ten times more than all the written notices you can send out.

Dr. Hood spoke about the co-operation of the societies. That is a fine thing. One of the most interesting meetings we had in our society was at the beginning of last year, when he had clinics that took up the entire afternoon. We sent to Chicago for a competent man. We had visitors from other societies. We had an interesting clinic, and an extra paper in the evening.

Another thing: In our society we have quite a number of members in Pontiac, in Livingston County, so that we have one meeting during the year at Pontiac. We thus exchange and do not have all meetings in the same place.

We have found in our society that twelve or nine meetings a year were too many, so we cut it down to five, and it is a good thing for our society to have five good meetings in the year instead of nine poorly attended ones.

It is very essential that the officers of these societies be active men who will take interest in the meetings and look after the members. Have a good program committee, a good secretary, and rotate the officers.

Dr. E. K. Blair, of Waverly:

Dr. Johnson spoke of the treatment we sometimes receive at the hands of the press, and it would seem as if it were the chief object of newspapers to ridicule the dental profession. Last year at a very excellent meeting of the National Dental Association, held at Minneapolis, the newspapers devoted themselves the first day or so to caricatures anything but gratifying to the convention. Two gentlemen from New York, distinguished members of the National Association, called at the office of one of the leading papers in Minneapolis and asked for the editor-in-chief, and with some difficulty gained an audience with him. They were instructed before leaving the office by the editor-in-chief to thank the convention on their return for what this self-appointed committee had done and to convey to the National Dental Association of the United States the regrets of this editor, who assured them that in the future the convention would be treated as it should be, and the reports in that paper the next morning were very gratifying indeed.

I think a little timely work from the right source will probably bring about results like that in some other localities, and I hope, if occasion offers, we will make ourselves heard, and that somebody will take the responsibility just as these gentlemen did in Minneapolis. The convention appreciated their work, and we felt more comfortable afterwards when we looked at the morning paper.

Dr. S. F. Duncan, of Joliet:

I said to you the other morning, I have been quite interested in the outline of a post-graduate course that has been established by the American Medical Association for the use of local medical societies, and I find in our part of the state it is working very well indeed. I do not know just what kind of outline we ought to have for this purpose, but, Mr. President, I am going to move that the executive council of this body appoint a committee of three to get up a program of work for the component dental societies of the Illinois State Dental Society. I make that as a motion.

Dr. Buckley:

I desire to second that motion.

Dr. L. P. Haskell, of Chicago:

I want to say a few words to the young men with regard to the heritage which has come down to them from the past. Most of you have no idea of what you have inherited. Sixty-three years ago, in the city of Boston, I started in a dental office. There was then the Baltimore Dental College, the only dental college in this or any other country. At that time it was considered by the best of dentists that a young man stood a better chance of getting a good dental education in a dental office than at a dental college. But that is not true today. At that time there was one dental journal. There were no dental societies, national, state, nor local. The dental office of that day was a close corporation, and unless you were intimately acquainted with the dentist you would not be allowed to go into the operating room when he was operating, nor would you be allowed to go into his laboratory, so that the dental student was shut up in that one office. I belong to the best dental society in the United States or in the World. It is the largest dental society in the world—the Chicago-Odontographic Society, which has between 750 and 800 members. Just think of that number of dentists, working together in harmony, with no politics in it. It is my honest belief that the dentists of the state of Illinois in general and of the city of Chicago in particular are really at the head of dental practice in the world today, and I think many of you will bear me out in that statement. I do not believe there is another city in the United States that has so large a number of young men and men of middle age, wide awake, progressive, inventive and literary, as are to be found in Chicago.

Twelve years ago I was in the city of San Francisco, and while there attended the most unique dental society meeting I ever saw. It was the Stomatological Society of San Francisco. Every Tuesday afternoon the dentists of San Francisco and of Oakland met at two o'clock in council. A paper was read, and then there was opportunity given for members of the society to bring in different cases for consultation, and at five o'clock they adjourned for supper, and then in the evening time was spent in discussing the paper. It was one of the most interesting societies I ever attended. I do not know whether it is in existence now or not, and I do not know whether it would be practical to establish such a society in this state. I want the young men graduating from our dental colleges to remember the splendid heritage that has come down to them.

Dr. F. V. Brooking, of Macomb:

I am not much of a speaker, but there is one phase of this discussion on which nothing has been said: I believe something should be said in regard to illegal practitioners in the state of Illinois. Some of them have gone so far as to create the impression that our present state dental law is unconstitutional, and they laugh and cast ridicule on that law as well as on some members of the state society, and I think there ought to be some instructions given from this body to the officers of local dental societies and to the officers of the state society in regard to their duties in prosecuting illegal practitioners of dentistry. When ridicule can be cast upon the dental law of this state, it is a bad condition of affairs and the members of this society should defend it right away.

Dr. G. W. Dittmar, of Chicago:

I take pleasure in saying, gentlemen, I am not a member of one of the best dental societies in the State of Illinois, but *the* best. (Applause.) The paper is idealistic. We need idealists in order to have something good to follow.

Regarding the remarks of Dr. Ritter on advertisers, let me say just a word. In a paper presented to us a few years ago by Dr. Henderson and in the discussion on it, we were told that we have, at least, four kinds of advertisers. Do not think, when we speak of advertisers, they are necessarily of the lowest grade. We can classify them into four groups. First of all, we have the ethical advertiser, and there are dozens of ways to advertise ethically, but I will only enumerate just a few. His office, his equipment, whether it is of the right kind, whether it is clean and tidy, his personal appearance, his character and reputation, are advertising him, gentlemen. The character of work he does, the service he gives to his patients, the way he handles his patients, providing he practices the golden rule and does as he intends to be done by, are proper means of advertising. A great deal more could be said, but I wanted to make that illustration.

There is another kind of advertiser, the man who possibly does not know any better than to allow his name to go into the newspaper in a sort of alluring newspaper advertisement, something which may be truthful, but we look upon him as an advertiser. He may live up to everything he says in that advertisement. He may be honest and delivers the goods. That is the second kind.

There is another kind of advertiser, the man who does not deliver what he says he is going to; who advertises two or three dollar plates, two or three dollar crowns, and fifty-cent fillings. He catches the gullible public and gets all that is possible to get out of them. He practices all kinds of fake schemes.

Then, we have a more undesirable advertiser than any of those I have mentioned, and that is the man who is constantly knocking and growling and kicking at his neighbors and boosting himself all the time. He thinks he is the greatest man in his locality, and that others do not amount to shucks. So much for advertising. The point I want to bring out is, we have ethical and unethical ways, and the only way to advertise is to do it ethically. Deliver the goods.

There is another thing that might be said in connection with this, and that is the ethical man lives up to what he practices and delivers the goods. Many dentists who claim to be ethical charge fifteen dollars and twenty dollars for crowns that are abominably made, and which do as much damage as the five dollar crowns. There is another point that might be enlarged on.

Dr. J. D. Wilson, of Danville:

I have had a little experience with illegal practitioners. We have had in the city of Danville the celebrated Starr case, the man who tried to bluff the State Board. The thing we had to do was to have these fellows prosecuted by the State's attorney, and we put them out of business. That is a hard thing to do, but there is the place for the local society to show itself. If you have such an illegal practitioner in your midst, let the local society appoint a committee whose business shall be to get the evidence and prosecute that man in the name of the local society. But do not go before a justice of the peace, you will get beaten if you do, for in a justice court the jury is judge of the law as well as of the evidence, and justice, constable and jury may prove friendly to the accused. You should go to the State's attorney.

With reference to ethics, we have a man in our district who is eligible to membership in our local society, except that he has a sign out which keeps him out of the society. He will not take that sign down. Now, the chances are that when this society meets at Danville next year he will have the sign taken down. We have another man in the district who is as ethical as anybody, but our local society obtained evidence to the effect that he was guilty of practices unbecoming a dentist. None of us wanted to tell him about it, and as we did not have the nerve to ask anybody to tell him, we decided to drop him. Men of that kind ought to be dropped from membership in our societies, men of absolutely immoral character.

A word or two about meeting places. Our society takes in Champaign, Urbana and Danville, as well as smaller places; half way between Danville and Champaign there is one dentist in a town. We had a meeting there along about Thanksgiving time, and the ladies of one of the churches served us a good old-fashioned turkey dinner at 50 cents per. We're going again this fall. If you go to a small country town in your district for a meeting you will get a larger attendance than you will if the meeting was held in your own town. The local members will give you a good square dinner. At least, that is our experience.

Dr. Arthur D. Black, of Chicago:

I want to say a word about the personnel of this society and its component organizations. When the reorganization committee made its first report about four years ago and asked for the adoption of certain changes in the constitution by which they thought its membership could be increased, there was a string to that suggestion, and that string was that if it was thought we could not increase our membership without, at the same time, keeping the personnel of the society where it should be, the change should not be made. I am not as pessimistic as Dr. Ritter, and I am a good deal more optimistic than Dr. Johnson. Before this society was reorganized all of its members were not angels by any means, and there are a few who belonged before it was reorganized who have been refused admission since. I do not believe the personnel of this society has degenerated during the past few years. I believe it has improved. There are a good many cases coming up that the members of the society do not know about. Less than three weeks ago I received an envelope without anybody's name on it, but with the newspaper advertisements of two members on the inside; I have received quite a number of similar envelopes during the last two years, and Dr. MaWhinney received some before that. Whenever such an envelope comes in, a letter is written telling the author of the advertisement wherein we considered the advertisement unethical, and asking him if he would not discontinue it, because we wanted his influence to help to raise the standard of dentistry in his community. A nice letter was written in which he was told that this matter would not be called to the attention of the officers of the society in an official way, and it would not be reported, provided there was not a repetition of the offense. I have received quite a number of very interesting letters in reply, in which the men who had inserted such advertisements have said that they had not thought their advertisements were in any way wrong or unethical, and that they would be glad to discontinue them. These are things the profession as a whole has known nothing about. They illustrate one phase of the work that is being done by the local societies in helping to improve conditions, and that from the evidence I have had of these matters, I believe we have a right to be optimistic regarding the personnel of this society. I do not wish to convey the idea, however, in saying what I have said that the conditions which Dr. Ritter mentioned are not perfectly true. I know they are true. On the other hand, we can't expect to do too much in too short a time. It takes a good deal of time to accomplish things along this line. I can show you, I think, an advertisement of Dr. G. V. Black in a Jacksonville paper many years ago which had a picture of a set of teeth in it. I might show you something of a similar nature regarding Dr. C. N. Johnson. Times have changed; but today the conditions in all sections of the state of Illinois are not the same.

We must bear in mind that as we go along, it is necessary to educate the public to the improved conditions in any section. We cannot improve in our ethical condition very rapidly, or not much faster than we can carry the people along with us. Do not forget that. One of the greatest duties this society can perform is for the individual dentists to educate the people in their respective communities. Why is it that in one section of this state men engaged in the practice of dentistry get two or three times as large a fee for a certain operation, as they do in another section. It is because the dentists have educated the people in these different communities to pay these different prices, and I am satisfied that people who are paying the smaller amounts will pay larger ones if they are educated up to it, and know that they are going to get something better for their money, which they always will.

The dental law of this state does not require the Dental State Board of Examiners to hunt illegal practitioners and prosecute them. It has been called to the attention of the members of the society not only in letters directed to the secretary, but in many of the issues of the *Bulletin,* that is is the duty of members of local societies not only to find a man who is an illegal practitioner, but also to secure evidence against that man. If the local men will do those two things, and the local State's attorney will not prosecute the man, which he ought to do, but which he generally will not, as has been found out in many cases, then is the proper time to go to the State Board, and I do not believe they will be found wanting in doing their part. It is not the business of the State Board to get evidence against illegal practitioners.

I have in my hand a paper which was handed to me by Dr. Duncan, and to which he referred in his remarks a moment ago.

This is entitled, "A monthly and weekly program for the first six months of a four years' post-graduate course of study, arranged for the use of county medical societies." This has been prepared by a committee of the American Medical Association, and the following out of this plan, if it is followed out, and as I believe it should be, is going to place upon this society one more of a good many burdens that should have been carried by the National Dental Association long ago. Yet, I fully believe that this society is quite equal to the emergency, and that we should blaze the way in this as we have in some other matters. However, I want to call attention to the fact that the carrying out of this plan by this society means more work for the committee that undertakes it and for this society than it has made even for the American Medical Association, for the reason that the literature of medicine is in better form. The American Medical Association in this pamphlet divides the work up into weekly meetings and monthly meetings for county medical societies, and for each subject references are given to articles in the medical literature, mostly to standard books. Suppose we present such a scheme as this to the dental profession, or to the societies of our State; this outline of study covering the different branches of dentistry, will be of little use on account of the condition of our literature. We want to get at the practical side of this thing, as Dr. Duncan says. Suppose a component society has outlined for it one particular subject, where is the literature the members of that society can have in order to study up that subject? A very large part of that literature has been published in our dental journals. We have not very many dental books as compared with the number of books issued by members of the medical profession, consequently, in order to study such a subject one will have to spend many months in digging through the dental journals to find the articles before he can study them, and not many men will do this. We must go further than the American Medical Association has done. We must assist the component society in outlining this study and aid it in finding the list of articles bearing on the particular subject, in order that it may be studied intelligently and systematically. That can be done by a central committee for the whole state much better than if we were to attempt to persuade men of the different societies to look the subject or subjects up for themselves. That should be added to the duties of this committee. I think we will have to go further than that. While we may assist the members of component societies in finding these articles, still they may not have the dental journals in which they can be found. If we carry this idea out, let us go through it from one end to the other. To do that the society must encourage each local society to put libraries in the central cities in two or three different localities. In addition to that, we must establish a circulating library in this society, so that the members in the smaller towns can get these things to read. If we can put dental journals or books before them so that they can study them, it will give them the best opportunity to pursue this course of study. If we are going to undertake this matter, the time is at hand when we should embrace the whole thing. I believe we can handle it. I know there are thousands of copies of duplicate dental journals in several school libraries which this society can have if it wants them. This society could build up within a year's time a splendid circulating library. Let us do the whole thing if we are going to do it at all.

I would like, with the consent of the maker of this motion, to suggest that this committee shall have the power to consider additional suggestions which I have made, so that the motion will be broad enough to let the committee do whatever is necessary to present this matter to our society in the best form.

Dr. Duncan:

I accept that. The idea was to have the committee carry out the entire scheme of post-graduate work for the component societies.

The executive council has under consideration the publication of a directory of the dentists of the State of Illinois, which will contain the name of the dental college from which each dentist graduated, when licensed to practice, and other information. That directory will include with it a complete list of all dentists who have ever received licenses to practice in this State, so that every man can have under his thumb, so to speak, a list of those men. Additions will have to be made every year. We will not have to go to the State Board to bother them as to whether a new man who moves in our community is a legal practitioner or not. We can look up his license if he has one, and every local society ought to have a committee to know whether or not the men in their community are legal practitioners. The Will-Grundy Society has had such a committee for several years, and that committee has cleaned that section of some of the worst men who ever practiced in this state, and if they can do it, other sections can do the same thing.

It is hoped that the publication of such a directory will, by placing before the members of each society the information they desire, put them in a better position to increase the membership of the local organizations. With all of these things before us and with the suggestions that have been made in this excellent paper, the members of the society should be stimulated to do the work before them in this state.

Dr. F. A. Lane, of Macomb:

In Colchester, in McDonough county, there is a man by the name of Meredith Rice, graduate of a college, a man with a diploma and two licenses. There is the point that causes all the trouble. He has an office at Colchester, with one license. His brother, Merritt Rice, is in one of our adjoining counties, outside of our jurisdiction, having an office. He is a twin brother, so near like Meredith that you can hardly tell them apart, when they are standing side by side, and he has got the other license, and he is not a dentist. Merritt Rice is not a graduate, and he has no right to practice dentistry. We have been trying for years to get that matter stopped. Last year at Quincy I went to Dr. Reid and stated the circumstances.

Dr. Robbins was there and he (Dr. Robbins) said he was going to try and get rid of him.

Dr. Reid:

I will ask Dr. Robbins if I did not discuss this case with him at Quincy, and he said he would take charge of the matter and we would pay the bill.

Dr. Robbins:

Yes. Pardon me for replying. The matter stands this way: I supposed the man had been stopped from practicing. I reported the matter to our State's attorney, who assured me he would take up the case and prosecute it to the end. As I had not heard from it, I presumed it had been done. Dr. Lane and the dentists in Macomb have called my attention to the matter two or three times. I corresponded with Dr. Reid, and we had a conversation in Quincy as to the facts in the matter. I did not know at the time that these gentlemen were twins, and I saw afterwards that if there was a mistake of that kind it was brought about by some crookedness on the part of these two men. If this matter has not been settled, it will be taken up when I get home.

Dr. J. G. Reid, of Chicago:

There are two Rices. One is Merritt Rice and the other is Meredith Rice, and Meredith Rice has a license issued upon a diploma; I do not remember what the college is now, but I think it was the old American Dental College. Two years after that this Meredith Rice comes in and asks for a duplicate license, to which every man is entitled, but which they do not get now, and have not for the last seven or eight years, until they make sworn statements as to why they want their licenses duplicated. This was done prior to the time I had anything to do with the Dental Board by several years. This man Meredith Rice has had two licenses. I do not know whether he has got the original license. The records show that Meredith Rice had an original license issued upon a diploma from a reputable dental college. The record shows a duplicate license issued something like two or three years afterwards by the same parties that issued the original license, as I remember it. What may have been done with the original license I do not know. I do not know whether that man now has two licenses or not.

When a duplicate is issued, it is supposed that the original license is lost. Every duplicate license is marked, and bears the same number as the original. It is only four weeks ago that I sent some money to Mr. Naylord, of Carthage, to look after this matter. Dr. Robbins has told you that the State's attorney has had his attention called to it, and I have done everything in my power I could from this end. You must remember, I am away from the seat of all this action, and I ask you to help the board out. We need your assistance in this work, and if we have it, and you can furnish the evidence, then Merrit Rice can be prosecuted.

Dr. E. M. Robbins, of Carthage:

When this matter was brought up at Carthage, this man, who was practicing without a license, claimed to be the agent of his brother, and was informed that that would not do and he would have to desist.

Dr. E. H. Allen, of Freeport:

As some of you are aware, I belong to the best dental society in the state of Illinois. (Applause.) I refer to the Stephenson County Dental Society. If any of these gentlemen whom you have been talking about should attempt to practice dentistry within our county, who had no legal right to do so, I would go to the State's attorney and make complaint. I would get the local society to back me up in this matter, and I would prosecute such a man. That is the place to do it. I would not expect Dr. Reid to come out from Chicago to do it. I don't think it is the business of a State's attorney, to ferret out all violations of the law any more than it is the business of you or I. If we are law-abiding citizens, and have the best interests of our commonwealth at heart, we will do our duty by making complaint against these illegal practitioners, and not stand back and wait for some one else to make the move, and then if nothing is done set up a howl at the State Board. If you want anything done well, do it yourself and *"Do it now."*

Dr. J. K. Conroy, of Belleville:

We have been co-operating with the State Dental Board regarding illegal practitioners, and this subject is strictly in line with the paper. I am not going to discuss anything but incidents which have happened in my locality. For any man to say that any illegal practitioner of dentistry in the state of Illinois is out of his jurisdiction, means that he does not interpret the laws of the state correctly. If there was a murder committed on the public highway and you saw it, you would be hauled up as a witness and would be justified in turning the case over to the state authorities. If there is an illegal practitioner in your locality, you do not need to mince matters a particle. I tried that, and because Dr. Reid did not answer my letter within twenty-four hours after I had sent it to him I got angry at him, and because I did get angry I was successful in prosecuting three men inside of twenty-four hours. (Applause.)

In the spring of 1905 a man started down the public highway in Belleville with a sign on his back and one over his breast, reading "Come and see me; I am over in room number two, Belleville House, National Dental Parlors." This was the first introduction of illegal practice of dentistry in Belleville. Several dentists called me up on account of their affiliation with the state society and said, "What are you going to do?" Two or three of them wanted to get busy right away, but did not want their names mentioned. Any man who does not want his name mentioned in a case of this kind is a coward. It is an easy matter to say you are going to do a thing but when you do not do it, then you are a worse coward. There was only one way to get at this matter. This man opened up his office. He proved to be a junior student from one of the St. Louis colleges, and was in the employ of the National Dental Parlors, and they had it advertised that he was a man of fifteen years' experience, etc. I went over to the County Clerk's office to see whether the man was registered or not. I went quietly into the office of the State's Attorney and told him. We got busy, and got two police officers in citizen's clothes, one to go in and have a tooth filled, and I told him that if the filling came out afterwards, or there was anything wrong with it, I would replace it and not charge him for it. The lady, who was assisting the man, had been working for the National Dental Parlors in St. Louis, and had been a patient of mine at one time. She was in my office that morning and had left my office to assist him. The police officer went in and had his teeth cleaned and a filling put in, the price for which was $1.00 for the filling and $1.00 for cleaning. He said he had no money with him, but would return shortly, and in about three-quarters of an hour he brought a police officer with him to see him pay the money, and in fifteen minutes later the fellow was over in jail.

The National Dental Parlors sent another man over with a diploma issued by the Kansas City Dental College. I am not mincing matters one bit, but I am stating the plain facts. That man was so ignorant as to the law that he went there without registering, and thought it was all right for him to practice. Now, if any of you gentlemen do not know that fact, I want you to know that our state law requires that all licenses have to be registered. This man had no license, and about an hour later he was landed in jail. In two other cases through the deputy sheriff of East St. Louis the parties were brought before a Justice of the Peace and fined $25.00 and costs each. What I want to say is, you cannot do good work in these cases by waiting for somebody else to do it. You must do it yourself.

Dr. T. W. **Pritchett**, of Whitehall:

Personally, I am glad that this discussion has taken place, for the reason many of you have learned a great deal about the State Board's proceedings. I believe you have a clearer understanding of the duties of the State Board in relation to these complaints, which ought to be set out in some manner so that everybody can know pretty nearly what is the right thing to do.

I would therefore suggest that a brief or circular of information be prepared, bearing upon all the matters involved in complaints and prosecutions for the convenience and use of the Secretary of the Board, and the profession at large. By such means a better understanding and united effort could be brought about for the suppression of violations of the law.

Dr. F. R. Fouser, of Joliet:

I have been very much interested in hearing the pros and cons on the subject of the enforcement of the recent dental law. We had a similar case in Will-Grundy County jurisdiction to the Rice case. There were two brothers, J. Finley Kettles (licensed), and C. H. Kettles (unlicensed). Only a few years ago C. H. Kettles, one of the brothers, was painting telegraph poles, but he left that occupation and associated himself with his brother. We called the attention of the State Board to the case, and they said: "All right, you get some evidence, and we will see if we cannot do the proper thing with this case." We got the evidence and fined Mr. C. H. Kettles $200.00 and costs for practicing without a license. We have not quite suppressed him yet, but we have suppressed him in so far that he personally has withdrawn. He still has his financial interests in the office, but he has withdrawn from the actual business of running the office and of coming in contact with people. But I want to impress upon you the necessity of every member of this society taking hold, and of not being bashful about helping to gather evidence against illegal practitioners. It is like one of our members of the State Board has said here, we have got to have evidence, and we are able to gather the evidence, and if it is placed in the hands of the State Board, they will push the matter through and take care of the public in the best possible manner. We cannot expect the State Board or their attorney to go all over this State and stand at the entrances of the offices of these illegal practitioners and gather necessary evidence.

Dr. E. K. Blair, of Waverly:

I wish to offer a suggestion. I believe these component societies ought to appoint committees of three, whose duty it shall be to begin prosecutions of illegal practitioners found in the several districts.

I offer this as a suggestion on the ground that it gives to the work of those who take the first step in the prosecution some authority for what they do beyond the action of one man in the community. I know that Dr. Conroy is a courageous man, and I am glad he acted as he did. But there are many men in communities who would rather suffer the inconvenience and the disagreeable features connected with an advertising dentist in their community than to take the initial step, because frequently the laity look upon them as meddlesome people who are trying to protect themselves rather than looking after the interest of the general public. They are sometimes misunderstood, and if they could act as a committee, if the first steps in the prosecution could be made by a committee of three, repesenting one of the component Dental Societies of the State of Illinois, it would give prestige to the movement and it would bring the State's attorney to think there was something behind it. Coupled with the fact that this committee, representing the local component society, is instituting this prosecution, it might be said to the State's attorney, if this case cannot be handled here, the State of Illinois has within its bounds the largest dental society in the world, actively prosecuting illegal practitioners, and protecting the public upon whom they are preying. I make this suggestion, in order that we may concentrate our efforts in a channel which will be serviceable in getting rid of illegal practitioners, I am quite sure from what I have heard, there are numbers of them in the state of Illinois, men who have no right to practice dentistry, and who are occupying the field to the detriment of the people who go to their offices for work and to the hindrance of those who have studied for three or four years in the best schools and have spent their money and equipped themselves for the work they are entitled to do.

They say, that no man has a right to move to adjourn and make a speech while he is moving to adjourn, but I am going to move that this subject be now passed.

Seconded and carried.

Dr. R. J. Hood, of Sparta (closing the discussion):

I rather think this little love feast will react beneficially to the society. The bouquet-throwing and eulogies that have been heaped upon one another here will ultimately result in great good.

I belong to the best dental society in the State of Illinois—the Illinois State Dental Society. It was my object to arouse the members of this society, and an effort was made to make you feel proud that you are members of this society and of the component societies composing it.

Dr. Johnson has told us that we have undesirable members, just as we have undesirable citizens. The idea I have regarding undesirables is that we do not want to throw them out, but help them to become desirables. If we cannot induce them to become such, then it is easier to drop them.

Dr. Sitherwood spoke of ethics and fees, saying they had eliminated them from their society as being unnecessary to discuss. That shows evidence of growth. It is an ideal condition, and if we can get to it we shall have attained something.

Regarding the question of illegal practitioners, I believe it is a great injustice to lay blame on the State Board. If we do not co-operate with them, we are at fault ourselves, as it is our duty to do so. The members of the board are not paid to go around and prosecute illegal practitioners. If we will co-operate with them they will be glad to give us all the assistance they can.

I wish to emphasize the cardinal points of my paper—enthusiasm, endurance, and action. We must keep up the enthusiasm of the members of this society and of the component societies. We must make that enthusiasm endure until we get action. I thank you.

CHICAGO-ODONTOGRAPHIC SOCIETY.

The regular meeting of the Chicago-Odontographic Society was held in the Chicago Public Library Building, on Tuesday evening, May 19, 1908, at 7:45 p. m.

The newly-elected president, Dr. Fred W. Gethro, occupied the chair.

Dr. J. A. Bullard read a paper entitled: "The Preparation of the Mouth, Impression and Model for Seating Base Plates."

DISCUSSION.

DR. L. K. STEWART:

Dr. Bullard has treated a very important, but difficult subject in an interesting manner, and I congratulate him.

He has particularly emphasized the making of the model, and I shall pass the technique of the preparation of the mouth and the taking of the impression, except to call your attention to the splendid information Dr. Prothero has given us relating to the mixing of plaster, and the contraction, and then the more or less expansion, and the final slight contraction of the material, as we use it. This knowledge should guide us in all of our use of plaster, and especially in the impression and model. Immediately after the impression has been taken it should be scraped when we find hard places in the mouth, as Dr. Bullard suggests, and the model poured. I prefer coating the rim of the impression with shellac, and brushing the part to be covered by the plate with soap and water just before pouring the plaster. As soon as the plaster hardens, the impression cup should be removed to prevent as much as possible the bulging of the palatal portion of the impression and model. The model should then be trimmed where we want the plate to seat itself more firmly into the tissue, as Dr. Bullard also suggests, the amount depending on the kind of plate to be made.

When the anterior portion of the alveolar ridge has become very soft and flabby, the model should be cut away considerably; in fact, it is astonishing how much can be removed, and the plate still go firmly into place. In taking the impression this soft mass has been moved upward and outward, and the corresponding part should be trimmed from the model.

Dr. Bullard in his paper discussed a model for a full case vulcanite, but the title included the "seating of the base plate," and I think it should have mentioned the making of the die, for the die becomes the model for seating the base plate. Personally I am opposed to the vulcanite substitute, and think those who can should eliminate it from their practice.

I wish to call your attention to a method of making a die which upon trial I think will meet with your approval. After the model has been completed and shellaced, you proceed as for any die, using for most lowers and some uppers a single ring flask, but where the shape of the model will not permit cores should be made, or a separating flask similar to the Hawes type be used. In some cases two waxed copper wires should be placed in the flask to run through the sand to the highest points on the model. These wires are withdrawn after the model is taken out, and the wires make vent holes from what will become the lowest spots in the mold. Then pack French moulding sand, slightly tempered with water, very firmly into the flask, using a heavy hammer and blunt piece of wood to drive the sand very, very firmly into place. The model has been dusted with a special graphite to prevent the sticking of the sand. Cores can be made of the sand and used as separate pieces. Remove the model, cover it again with the graphite, place it back in the mould and drive the sand down again with the hammer. This will give a much sharper mould, and can be repeated until your mould has a glossy, black appearance, and you are satisfied all the fine lines are reproduced in the sand. Pour the die with hard bronze, which is practically 9 parts copper. 1 part tin, and melts about 1,600° F. You will need a jeweler's fire clay furnace to melt this alloy, but it will give you a much sharper and harder die than zinc, Babbit metal or any of the alloys in use. The French moulding sand can be worked indefinitely, but will have to be crushed, passed through a sieve, and re-tempered each time. The bronze die can be used with a press, shot swedger or counter die. I wish to call your attention particularly to that old Hawes flask, and I always use it where there are any under cuts. Do not take an impression and let it lie about your office for hours, or after a while send it to a cheap laboratory to be handled by unskilled workmen at their leisure, and allow them to make you a model, or die which only roughly represents the mouth. You must take the impression, and why not go a step further, and make the model and die, and if you are obliged to, let an outsider assist you with a part of the balance?

Dr. D. R. Phillips:

I always approach the discussion of a paper with a feeling of diffidence, for I am aware of the advantage I have and would not have if I were the essayist.

In preparing the mouth for an impression, the point which the essayist makes of smoothing the alveolus by removing the soft tissues is a good one wherever it is necessary. Sometimes it is not necessary. Frequently the soft tissues may be very easily pressed out of existence. Those cases where the plate has had the most pressure on the anterior portion of the mouth frequently need nothing whatever except pressure to make them all right, but there is no objection to excision, except, perhaps, on the part of the patient.

There is frequently a condition of engorged capillary circulation that it is well for you to take in hand, and in doing that, if you could have your way, I think it would be a practical plan to have your patient take a large saline cathartic before breakfast, better four or five hours before you take the impression, and then take the impression twice. The first impression will act as an astringent and absorb a large amount of moisture from the soft tissues of the mouth, and reduce the size of the mouth, and your second impression will be a much better impression, and a much closer fit.

In regard to severing the cord, which frequently exists, after extraction, between the mucosa of the alveolus and the cheek, I would say to sever that after the permanent plate is made. After the model has been poured trim out the model about the way you think the plate will be, then go ahead and finish up the plate. After the plate is nicely polished you may easily sever that cord, and I believe a smooth polished surface of rubber will be better for the tissues to heal against.

Now regarding the impression, the material used does not taste any too good at any time. In my mouth the addition of salt is positively nauseating, and I would prefer potassium sulphate. In the further preparation of a plaster impression you can sometimes use a little cassia water, or something of that kind to help the taste. You would find it very acceptable to your patient. I thank you.

Dr. H. F. Methven:

I wish to compliment the essayist on his most excellent paper presented this evening, with which I most heartily agree in most particulars. The principles presented are similar in most respects to those which I have followed ever since I have been in the practice of dentistry.

With reference to the relieving of the hard area of the palatine portion of the impression, I do not believe in scraping to the depth suggested by the essayist, as, every case is different and needs special study to determine the amount of scraping to be done. This is best accomplished by compressing with the finger the tissues over the hard areas of the palate and the soft areas of the ridge to determine its extent and density, and then scrape impression and model, according to conditions found in each individual case. I wish to emphasize also, that the scraping of the hard areas is done on the impression, and the soft areas on the model. The depth of one-twelfth of an inch, which the essayist states in his paper, is, in my judgment, too great, particularly in cases of vulcanite work, when the base plate presents an additional thickness of about the same amount. The result in such a case would be, the lingual surface of the denture where the scraping was the deepest, would extend down in the mouth about one-sixth of an inch, an amount sufficient to seriously interfere with enunciation.

In the first case mentioned, where the hard ridge through the central palatine portion is scarcely noticeable, I would not scrape this case more than one-half to one millimeter, and the second, not over one and one-half millimeters. He also recommends the scraping of two auxiliary reliefs on either side of the center one for suction chambers. This second scraping for suction purposes is unnecessary, as it is now generally conceded that a suction chamber, as such, is of no value, unless its peripheral margins extend beyond the hard areas. I had a case last Wednesday which will partly illustrate the use of the so-called vacuum chamber. A patient presented herself for a full upper and lower denture. In the old denture which she was wearing, was one of those heart-shaped vacuum chambers. This one, in particular, also had a number in it—12,369. On examining the mouth prior to taking the impression, I found in the palatine portion an exact reproduction of the vacuum chamber, with all of its markings. When I had removed the impression I looked at it carefully, and the numbers were there also, just as distinct as they were on the plate. Now, the same thing would occur to these two extra chambers which the essayist forms on either side of the central one, and, instead of having a chamber or a space existing between the plate and the tissues, he would, in a short time, have an adaptation of the plate and tissue. To prove that the tissues will fill any space which may exist between them and the plate, try this experiment. Take a plate which fits in every way, with the exception that it does not quite come in contact with the tissues at its distal termination or that portion which extends slightly beyond the hard palate and should imbed itself in the soft tissues slightly. Take a little of the common base plate wax, either pink or red, and melt a small strip, say two or three millimeters in width across the entire distal portion of the plate; then warm it slightly, put in patient's mouth and press firmly in place. This adapts the wax to that portion of the tissues not in contact with the base plate. Remove the plate and trim off excess wax and smooth the edges with spatula. Insert plate in mouth and dismiss the patient. The heat of the mouth will slowly dissolve the wax away and the tissues will follow it down, and, within two or three days, you will have a perfect adaptation of the plate with tissues.

While I do not recommend this as a general method of practice, I have experimented in the manner described and have filled up a space at least three millimeters in width. The conditions necessary to retain a plate in the mouth are close adaptation of the plate to soft tissues, relief in the palatine or other portions to prevent undue pressure on the hard areas, and proper anatomical occlusion of the teeth, so that the plates will not tip under the stress of mastication. This is accomplished by securing the three-point contact. The viscosity of the mucous and atmospheric pressure are important agents in retention. The tongue and cheek muscles, acting as a pump, practically make a partial vacuum of the entire palatine portion of the plate.

In regard to the expansion and warpage of plaster of paris, this may be overcome to a great extent but not entirely controlled. The manipulation of this material plays a most important part. The proper proportions are about forty cubic centimeters of tepid water; fifty-five grams of plaster of paris, five-tenths of a gram of sulphate of potassium. The sulphate of potassium is first added to the water and dissolved; the plaster is then sifted in slowly and allowed to percolate through the water until the latter is all taken up by the plaster. No stirring or shaking of the bowl is made until the plaster is all saturated. Then, with the sharp edge of the spatula, make two or three cuts through the mass to eliminate any air that might be confined in the deeper portions, or—the sides of the bowl may be squeezed together. This is usually all the stirring that is necessary. The least amount of stirring, the less expansion the kind of a mix described will give you and the densest kind of an impression and model. If you do not care to be so accurate in regard to the exact proportions, take one of the common rubber plaster bowls and fill it about one-quarter full of water; this will be about forty cc., and the amount of plaster added will be about fifty-five grams. The sulphate of potassium you can have put up in little powder papers at any drug store, in the right weights. Plaster of paris for impressions or models should never be mixed thin enough to pour, but should be stiff enough to hold its own weight, and should be tapped to force it down into the deepest parts of the impression. To prevent the warpage the essayist speak of—this can be overcome by removing the impression from the tray, when practicable, and as soon as possible. The expansion is then uniform and without warpage.

The model should then be run, and as soon as it has set sufficiently, the impression should be removed. Now, this removal does not mean in two or three hours but in ten to fifteen minutes. This insures an even expansion and very little, if any, warpage. Compensate for the expansion by scraping around the entire periphery of the model a little below the junction of the attachment of the muscles and across the distal termination of the plate.

A plate constructed over such a model, if all the previous details have been carefully carried out, will certainly fit, provided there has not been too much force exerted in closing the flask, the resultant pressure of which would produce distortion.

Dr. Lucien H. Arnold:

I would like to add two things to what has been said. Emphasis has been laid on the use of shellac varnish for a parting material. For a long time I had been using for this purpose a mixture of two parts of shellac varnish and one part sandarac varnish in thin solution. Two coats on a dry impression gave a nice gloss to the finished model. Later, however, I have been using a formula given me by the Berry Dental Laboratory people which is as follows:

To a strong, boiling solution of borax, add shellac scales till the liquid becomes very dark in color—boiling and stirring constantly till shellac is all dissolved. It dissolves nicely but makes a muddy-looking solution, which is, however, a good chemical solution, of very dark red color. In using this separating fluid it is not necessary to wait for the impression to dry, but on taking it from the mouth it is rinsed, dried and given a thin coating of the fluid, allowed to stand one or two minutes—long enough to mix the plaster for the model and then the model poured at once, thus allowing no time for the impression to become distorted. When separated, the model will be found to have a very desirable, glossy surface. As to base plates, I do not like any plate other than a metal plate. After the model is made and the die and counter die run and the plate nicely swedged, it is carried to the mouth and inserted and the finger, on being run around the plate edges, will detect any places where the plate stands away from the gums, With a small round-nosed pliers these outstanding places can be bent as closely to the gums as they may be with comfort, smoothing the edges as the work proceeds, and continuing over the palatal portion and, the edges having all been perfectly fitted, it is no very important matter whether the rest of the plate fits *absolutely* or not. If the margins are all up tight the plate will stay in place and stay well, whether the rest of the plate is in perfect apposition or not.

Dr. Hart J. Goslee:

This paper touches upon a very important phase of the subject of prosthesis, namely, the philosophy of the retention of upper dentures. I am exceedingly sorry that I was not here in time to hear the entire paper read, but I heard the latter part of it, and have gleaned much from the discussion as to what it consisted of, and I therefore take it that I am correct in assuming that it treated of the philosophy of the retention of upper dentures, which must be regarded as an exceedingly important phase of prosthetic dentistry.

As I listened to the reading of the latter part of the paper, and to the discussion, I felt that I might possibly add something to the subject, but after Dr. Methven got through I did not think that there was very must left to be said, and I want to endorse everything that Dr. Methven said. In effecting the retention of upper dentures, the first essential is necessarily a good impression. I am afraid that a goodly portion of the members of our profession do not pay quite enough attention to the taking of the impression, and particularly for a full denture. I am told by a great many dentists in general conversation that they resort to modeling compounds for almost all kinds of impressions. Such materials as that are unreliable, and particularly are they unreliable in proportion as the case becomes difficult. Granting that the impression is the first important consideration, then the preparation is the next consideration, and I want to agree with what Dr. Bullard has said in regard to the preparation of the impression. Now, I know that Dr. Haskell never pays any attention to the impression after he has obtained a good one, and that all the work that he does for the purpose of obtaining equalization of the pressure upon which the successful retention of the denture is so largely dependent, is done upon the model, and particularly is that true in metal work. I believe, however, that the hard parts of the mouth should be, and can best be taken care of by treating the impression itself. I feel that it is much more positive and certain when we know that a definite amount of relief is necessary, to do that in the impression itself. It then becomes positive on the model, and is never changed, whether we construct a vulcanite denture or a metal base. Dr. Methven has disagreed with Dr.

Bullard as to the amount of scraping we should do, and we are governed only by the thickness of the soft tissues covering the hard parts, and in proportion as that diminishes, then must we scrape more and more, and I do not know of any definite guide to go by, except as our experience will dictate to us. After having prepared the impression in this manner, then some preparation is also necessary on the model as a means of increasing the pressure of the denture upon the soft places. That is done on the model by subtracting from or scraping into it. The effort should be directed toward preventing the riding of the denture upon the hard places of the mouth, allowing it at first to come in contact with and ride only upon that area of the arch covered with more or less soft tissue and precluding the possibility of having it come in contact with such tissue as is hard or covered with a very small amount of soft tissue, and if this relief or scraping is done on the model where the soft parts are, then we have the effect of an equalization of pressure, or have produced a condition which does not permit of our plate or denture fitting accurately on all of the tissues of the mouth.

This makes it rest first and primarily upon the softer tissues, and then subsequently as it is worn and settles in the mouth, it gradually rides evenly and more or less uniformly upon all of them, and only by this means can we overcome displacement of the denture by any substance placed in between the teeth.

On the subject of vacuum chambers, I criticize Dr. Bullard when he referred to them as "air chambers" and "suction chambers." I think those names have been discredited. The philosophy of the vacuum chamber has been discussed at a greater or less length in some of our journals for a number of years, and I believe the solution of the problem reached by a majority of those who entered into the discussion was to the effect that a vacuum chamber was useful only for temporary purposes. That was proven nicely by Dr. Methven when he referred to the pulling down of the softer tissues of the mouth into the vacuum chamber until it became filled up with soft tissue, thereby destroying any usefulness it ever had. It is a fact if we have a slight space or vacuum in between the denture and the soft tissues of the mouth, that it will be effective in the retention of the denture for a few days or weeks possibly, after its insertion. It enables the patient to become accustomed to it sooner than otherwise.

Therefore I always place a slight vacuum in between the denture and the soft part of the palatal area, and I believe by that means we increase the adhesion of the denture at the beginning.

I want to emphasize a point brought out by Dr. Methven in that particular connection, and it has been brought out by Dr. Haskell and Dr. Prothero, and that is, that the periphery of the vacuum chambers must be, in order that they be effective at all, brought up to the soft tissue. The area must not come in contact with the hard tissues at any point. If it does they are useless, while if that periphery is brought beyond the hard tissue, and goes to the soft area we have the advantage which I have just mentioned, an increase in the adhesion of the denture when it is placed in the mouth, which increase lasts for a few days, until it becomes filled with tissue. If it is going to become filled in with soft tissues it is absolutely useless, and it disfigures the mouth, and is a source of greater or less irritation. If we will relieve the impression in that particular area where the tissue is soft in the palate, so that we have a slight vacuum between the denture and the soft tissue, and the margin of that is altogether in soft tissue, then we have the advantage which I have mentioned, and that is, an increase in the adhesion of the denture to the soft tissue at the time of the insertion. This aids one in becoming accustomed to it.

I am particularly pleased that such an important and practical subject should come up, and I think it quite fitting that it should have come up at the last meeting of the year, because it is practically the little things which are of such importance, and yet so simple that we often overlook them, and neglect them. For that reason I am always pleased to see a subject of this kind discussed. I want to endorse everything that was said by the essayist, and also by the gentlemen who have discussed the subject.

Dr. J. H. Prothero:

Mr. President, I want to speak of only one point, and that is the value of the vacuum chamber so-called. Did you ever consider that the air which surrounds the earth has a weight? It extends out about fifty miles from the surface of the earth, and the outer layers weigh much less than the layers toward the earth. The outer layers are pressing down until at the surface of the sea the pressure of the outer layers amounts to 14 7/10 pounds per square inch. Now, if you have two flat plates, and extract the air from between those plates, it will require as much force to separate those plates as their area, multiplied by 14 7/10. If the plates were two inches square we would have four square inches, which multiplied by 14 7/10 would amount to 58 pounds of force necessary to pull those two apart. If we have one plate, with a raised rim, and one plate plain, and put those two together, and extract the air between the surfaces, it will require no more force to separate those two plates than it would those two plain surfaces. Here is the practical application: A vacuum chamber is of no earthly use because it does not produce any more suction or adhesion, and its presence does not add one iota to the stability of the denture, and when Dr. Bullard speaks of relieving the palatine portion of the plate, I do not think he means for the purpose of forming a vacuum chamber, but to protect the life of the denture in the hard area, and consequently the tipping that would result before the plate became firmly set in the soft portion. So, if we will simply think of that action of the air, we can readily see why the vacuum chamber is not practical. I am satisfied in my own mind that there never has been a vacuum chamber placed in a denture that ever did any good other than to afford more or less relief, which is not of any practical importance, when the periphery of the vacuum chamber does not extend beyond the hard area, as mentioned by Dr. Goslee.

It is not necessary to scrape to any great extent. I think the amount mentioned in the paper is a little too great. There may be some cases where it would be possible to scrape one-twelfth of an inch, but the point made by Dr. Methven was a good one, that if you add the amount scraped to the thickness of the denture itself, that makes one-sixth of an inch, which will seriously interfere with speech. I have not used the vacuum chamber, and I do not think there has been any used in the clinic for eight or nine years, but we have always aimed to relieve by scraping the model, so as to secure closer adaptation. That is all that is necessary, and we have obtained splendid results.

DR. G. W. DITMAR:

Mr. President, I would like to call attention to one point which I saw demonstrated by Dr. Roach. It is in regard to fitting a metal base plate to the mouth. As has been stated, and it is a fact, that very frequently in spite of the good impression you try to get, and the good model, the metal base plate still does not fit satisfactorily.

There seems to be a place here or there where the adaptation might be a little better. The trick is this: After you have the metal base plate swedged up, and you find there is a space here or there that is not adapted well, take a little wax and place it on the palatal portion of the base plate, warm it, and compress it to position, getting a perfect impression with the wax on the base plate. Then, if it is for the first swedge you can pour that on plaster, if you wish, and after the plaster has hardened thoroughly, then warm it, and have the wax well distributed, and then burnish the plate down in the particular places, having something definite to go by.

Dr. Arnold stated that he generally used a pair of pliers to get a more perfect adaptation. That is guess-work, because you have not anything definite. By this other means you know exactly what you are doing. If you wish to you might take some high-fusing compound. The trouble with that, however, is getting rid of the compound, but if it is over a limited area you can put a little moldine over that point, and flow some fusiloid, and burnish to that. In that way you have something definite to go by.

Dr. Lucien H. Arnold:

Evidently I did not make plain what I wished to say, as Dr. Dittmar has shown me by his remarks. He said there was nothing to go by in bending the edges of the plate as I spoke of. The plate is put in the mouth and the finger run along the edges of that plate while in position and the outstanding edges are readily detected. These are then bent down to place and the plate again inserted and another misfit found and bent to place and so on till the entire edge of the plate has been perfectly fitted. If the bending has been a little too zealous it can be bent back. Instead of there being nothing to go by, there is everything to go by. There is the mouth itself.

Dr. Gillis:

Mr. President, I would like to ask as a matter of information, of Dr. Prothero, or some of the other doctors, whether in scraping the relief chamber, you would make the margins rather sharp, or let them go gradually into the softened tissue, or the area beyond?

Dr. Bullard (closing the discussion):

I am very glad indeed to have this paper bring out as much discussion as it has, and I shall try to take the points up as they were presented.

I stated in my paper that the margins of the relief were gradually shaded off on to the surface of the impression, leaving no sharp angles or edges.

Dr. Stewart said that my treatment of the impression and model seemed to be for vulcanite work. It makes no difference whether a vulcanite or metal base is to be constructed, the preparation of the impression and model is the same with the exception of the relief of the model around the plate line, which would be deeper for metal than for vulcanite. The die on which the base is swedged should be an exact reproduction of the model, and this goes outside the scope of the paper.

In regard to the shrinking of the tissues of the mouth, referred to by Dr. Phillips, that is a good point. When a vulcanite denture has been worn for a long time and the tissues are inflamed, and engorged with blood, if you can deplete them before the impression is taken, you do get a closer adaptation of the base plate. I have usually had the patient rinse the mouth with very cold water for possibly ten minutes before taking the impression; but after taking one impression. I can not see how the blood supply of the membrane of the mouth would be in any measure reduced. Should think it would be increased by the warm plaster and the mechanical stimulation produced by taking the impression.

The statement that the relief in its deepest part should be about one-twelfth of an inch in depth, is what I intended to say. I know very well this is excessive, but the majority of impressions are not scraped deep enough, and this is the reason that so many men who have been taught to scrape the impression, soon pin their faith to the metal form for relief. And again, there will not be one-twelfth of an inch between the palate and the plate when placed in the mouth, if the impression and model have been prepared so as to throw the pressure of the base upon the soft parts which are condensed by pressure, and will allow the base to come almost in contact with the surface which has been relieved in the center of the palate.

Of course, as has been stated, you have to use some judgment, and it is necessary to make an examination of the palate. If all cases were relieved just alike, there would be no need of scraping the impression. The metal form for relief could be used for all cases. But the tissues covering the palate are hard in one place and soft in another, and the scraping of the impression is done according to each individual case.

In regard to relieving the plate so it does not touch the center of the palate, if the relief is produced by the use of a metal form, giving it sharp edges, the tissues will be drawn into it, so that in cases where the tissue is soft in the palate, the chamber in the plate will fill with soft hypertrophied tissue; but if the palate is hard, it takes a longer time for the form of the relief to be transferred to the palate. And this is done, not so much by drawing the tissue into the chamber, as it is caused by the condensing of the tissues of the whole palate, and practically stamps the outline of the relief into the palate.

Dr. Goslee criticises the terms "suction" or "air chamber," and favors the term "vacuum chamber"; which is as much of a misnomer as either of the others. A vacuum chamber would mean a chamber where the air had been completely exhausted, and which was unoccupied by any other substance or matter. This condition does not exist when the plate is in the mouth.

Dr. Methven speaks of the vacuum of the whole surface of the plate. This would mean that the base plate would be drawn against the tissues by a pressure of about fifteen pounds to the square inch, and if a vacuum existed this pressure or drawing would be continuous, and the pain caused would be so great that the patient could not endure it.

I am very much of the opinion that the moisture of the mouth has a great deal to do with the adhesion of the base plate to the surface of the mouth; that to place a dry plate in a dry mouth, it is very difficult to get a vacuum between the two surfaces. I doubt very much that it can be done. If the mouth was of a uniformly hard, dense surface, and the plate fitted it in every particular, we might get a vacuum, but between the two surfaces, even though they do not fit each other perfectly, by placing a little water or saliva between those two surfaces you get adhesion of one to the other. The fluid of the mouth, the saliva, has a great part to do in the adhesion of the base plate to the tissues upon which it rests.

I did not mean to convey the idea that I started in with the knife in every case in which soft tissue appears, and pared it off. I was referring to those cases where the soft tissue of the ridge, the supporting process, is gone entirely, leaving a great, rolling mass of tissue. You can, by persistent work, get pressure upon that, probably, but it is simpler and easier to remove it.

I call to mind one case that occurred at the College—the construction of a base plate for a man who had worn a plate since he was eighteen, and he was then near fifty. It was one New Year's day, and the boys were nearly all gone. There was only one student in the Infirmary in that department, and he and I must have spent about five hours getting that metal base plate to rest firmly upon that large mass of soft tissue, which composed the ridge, from, possibly, the region of the second bicuspid all the way around the anterior part. The man is still wearing that plate. As I told him then, and should now, I would advise the removal of that soft tissue, and I think he would get much more service out of his plate and it would be much easier to construct.

COLLEGE COMMENCEMENTS.

DENTAL DEPARTMENT BALTIMORE MEDICAL COLLEGE.

Graduates—A. Brumberger, New York; G. J. Buckley, New York; E. Clark, Florida; J. W. Davis, New York; M. A. Dolowitch, Sydney, Australia; A. D. Elkins, New Hampshire; C. W. Fuller, New York; J. D. Gregg, North Carolina; J. J. Grimley, Connecticut; J. E. Harden, Rhode Island; J. H. Kiniry, New Hampshire; L. G. Lohmann, Maryland; T. L. McCarriar, Maryland; E. R. McClintock, New Brunswick, Can.; H. C. Newburger, Maryland; E. Paquin, Rhode Island; N. S. Wood, Massachusetts.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

DENTAL PHILANTHROPY.

This subject has many phases. About a year ago we suggested in an editorial that it would be a very desirable thing for some wealthy man to endow a laboratory for the purpose of original investigation in dental science, and we think that this must ultimately come to pass from the very necessities of the case. When wealthy men are made to fully realize the benefits that would accrue to humanity from such a movement there will be found many of them willing to foster it. But this is a matter of education, and the profession must first demonstrate even more vividly than in the past the great value to human life and happiness of efficient dental service.

Another phase of dental philanthropy is the establishment of free dental dispensaries. This movement has not assumed any appreciable dimensions in this country and the only real and sustained effort along this line with which we are familiar is the Free Dental Dispensary of Rochester, N. Y. This was opened in February, 1905, and is still in operation. It was established and is maintained by the energy of the members of the Rochester Dental Society, aided by contributions from citizens and dental supply houses. A recent report gives the following statistics since its establishment:

1905.		1906.		1907.	
Patients	342	Patients	680	Patients	966
Operations	711	Operation	2,107	Operations	3,175

This is a philanthropic movement of a practical character, and the profession of Rochester is to be congratulated.

Another laudable philanthropy is the constant effort on the part of the profession every where to further the idea of educating the public on dental matters. This has long been discussed at society meetings and in our periodical literature and various plans have been suggested and tried, no one of which is found wholly satisfactory. At its recent meeting the National Dental Association approved of a small pamphlet submitted by a committee who had been appointed for this purpose, and the idea is to have this pamphlet made available for distribution among the people by dental societies all over the land. Coming as it does from the National Dental Association there can be no charge that its distribution will further the personal interests of any one, and at the same time the authority of our national body will give it a standing among the people.

The fact is that dental education of the public cannot be advanced to its greatest perfection by any one plan alone. It must be done in many ways—by pamphlets, through the newspapers, by lectures in the public schools and before women's clubs, and in the personal contact with the people. One very effective way of impressing the public with the advancements being made in dentistry is to have intelligent reports of dental meetings published in the daily press. It has frequently been the case that the press has done more harm than good by a vulgar attempt at witticism in describing dental meetings, making the reports read more like the doings of a set of buffoons than of scientific men working earnestly for the welfare of their fellows. A really notable exception to this sort of reporting was furnished by the press of Ottawa, Canada, at the meeting of the Canadian Dental Association in August. The papers of that city published very full reports of each day's meetings, and gave the public an intelligent idea of what was being done in a dignified and most attractive manner which was really refreshing to those who have followed the usual newspaper reports of such meetings. It was an innovation which was highly appreciated by the members in attendance, and it would be well for the press of other cities to take an example from the Ottawa papers.

EDITOR'S DESK.

STRICTLY PERSONAL.

I wish people would stop trying to save my soul. This is said with the utmost reverence, the greatest charity, and an entire absence of flippancy. It is merely a polite protest against a life-long persecution, and the fact that the persecutors have often been among my best friends does not necessarily lend enchantment to the scene. Ever since I can remember this inexplicable thing called my soul has seemed to be the object of much solicitation on the part of many of my acquaintances. For this I suppose I should be thankful and flattered, and I can truly say that I am not ungrateful.

But one of the chief difficulties of the situation is that each has a separate method or a different formula for saving souls. One man, a very dear friend, claims that every night for the past twenty-five years he has never failed to carry my case to the throne of grace in prayer. If this is true, and I have no reason to doubt his word in such a matter as this, that makes more than 9,000 distinct supplications on my behalf by this one individual—which ought, if his method were effective, to save any soul, even a worse one than mine. But the peculiar thing is that in the quarter century that I have known him he has changed his ideas several times as to how souls should be saved. When I first met him he was a staunch Episcopalian, and then he become a Methodist. When last I saw him he had concluded that the Salvation Army method was the correct one, but now after a number of years he writes me that the churches are all astray, and that there is no true religion in any of them. What his present belief is it is difficult for me to understand, though he has tried faithfully to explain it to me. In any event, he assures me that it is the only real and certain road to salvation, and I am wondering where I should have been today had I been won over by him when I first knew him. Of one thing I am sure, that I never could have kept pace with him in changing beliefs.

And this is the trouble. There are so many plans of salvation that it is bewildering. One of the bitterest debates I ever heard was between two ministers of the gospel over a question of creed. Each claimed to have proved his point beyond peradventure, and yet if what either said were true the followers of the other were straightway on their road to hell for unbelief.

And I cannot see it that way—I sincerely and honestly cannot—and I have pondered a good deal upon it. I cannot think that hell is a question of belief, or that it is a place of abode. I believe in the heaven created by good works, but not in a hell fire kindled for eternity. It is too monstrous.

I am not foolish enough to wish to jeopardize my future by a flippant disregard of any of the essentials. I think seriously upon these things, and the essence of all my thought is that to constantly do good and always be kind is the very best religion. This in spite of the fact that one of the last sermons I heard from the pulpit placed good works in the category of dross, and lauded belief—this particular minister's own belief, be it said—as the one essential to life everlasting.

Well, may be so, but that is not my point of view. I am willing that the minister should believe that if he must, but I do not want him to insist that I shall believe it. For mere harmony's sake I should like to be able to believe as my friends want me to, but I should have to be a mental acrobat or a kaleidoscopic professor to keep in line with all of them. No, the thing to do as I view it is for every man to live up to his highest possibilities in good and loving service, with an eye single to the greatest amount of happiness he can contribute to the world, and not concern himself too much about creeds, or beliefs—or unbeliefs. Above all, let him be charitable about the opinions of others, and let him not intrude his particular belief upon every passerby.

To insist that others shall believe as you do is not only aiming at an impossibility, but in many instances it is offering an insult to the intelligence of those whom you seek to influence.

DOMESTIC CORRESPONDENCE.

EROSION INFORMATION WANTED.

To the Editor:

I should like to hear of the methods used in various offices in the treatment of erosion and the success attendant thereon. And that I may not be asking something for nothing, I give here my own practice for your consideration.

For the past nine years I have used the following method and have found it good, though painful:

I have treated a rather large number of cases, and in all have seemed to arrest the progress of the disease, though in one or two I have had to repeat the treatment in the course of time, because of returning sensitiveness. The treatment is as follows:

The teeth are carefully polished and cleaned and the gums and mucous membranes cleaned and massaged and the mouth made as nearly sterile as may be. The dam is then placed and crowded as far up as possible to expose the entire eroded surface. The affected teeth are then freely bathed in hydrogen dioxid and the chemical dried into the tooth with a warm instrument. This is done to make use of both the cleansing and mechanical emptying properties of dioxygen, thus opening up and disinfecting the enlarged orifices of the tubuli. After the dioxygen is thoroughly dried chloroform is freely used to wash away any fats that may be present and the tooth wiped dry.

Then a stream of warm air is turned on till the tooth is dry.

The tubuli now being as free from foreign substances as I can get them, 40 per cent formalin is then applied plentifully and dried into the tooth as thoroughly as can be done with hot instruments and hot air, a bit of paraffin placed on the affected spot and melted there with the hot instrument and the heat carried as high as the patient can stand, the object being to get the paraffin as deep into the tubuli as possible. Treatment repeated six or eight times two or three days apart and the case dismissed with instructions to return at once should sensitiveness again develop.

I know of nothing better. Do you? Kindly write me your methods and successes or failures.

Lucien H. Arnold, D. D. S.

3154 Indiana avenue, Chicago, July 25, 1908.

THE DENTAL COLLEGES OF AMERICA

Dental Department, University of California, San Francisco, Calif. First class graduated 1882. Total number of graduates to January, 1908, 672.

College of Dentistry, University of Southern California, Los Angeles, Calif. First class graduated 1900. Total number of graduates to January, 1908, 151.

THE DENTAL COLLEGES OF AMERICA

Dental Department, College of Physicians and Surgeons, San Francisco, Calif. First class graduated 1897. Total number of graduates to January, 1908, 370.

Colorado College of Dental Surgery, Denver, Colo. First class graduated 1889. Total number of graduates to January, 1908, 213.

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Cleaning a Wax Form for an Inlay:—It is a fact that inlays after casting oftentimes have what is called a silicate coating, and it has occurred to me, possibly that was the result of the smearing of saliva on the wax form. For some time I have been washing all these wax forms in water, then in alcohol, and have not yet one case of such coating to report.—*Elliott R. Carpenter, Chicago.*

A New Use for Procelain Inlays:—A recent use for porcelain has come in its combination with the cast gold inlay in cases where considerable gold would be hidden by forming in the wax model a cavity embracing the exposed portion, into which, after the gold has been cast, a low fusing porcelain is baked, making in effect a bit of work similar to the enamel work of the jeweler.—*J. F. F. Waltz, Decatur, Ill.*

Manipulating the Investment for a Cast Inlay:—If you want to get the best results in the fitting of a metallic inlay by casting, I should say get the investment over the flame as soon as hard and get the inlay out of the investment as quickly as possible. Where I have invested my wax and have left the investment lying around my office for twenty-four hours, and then cast the inlay, it did not fit so well. That is not, in my opinion, the fault of the shrinkage of the metal.—*J. G. Reid, Chicago.*

Chilling Wax Impressions for Inlays:—I have had excellent results from the use of ethyl chloride. Spray a small quantity on a piece of cotton, then press the cotton around the tooth and exposed surfaces of the wax, when properly formed in the cavity. The volatilization of the ethyl chloride is responsible for the rapid chilling, after which the wax form can be removed with a feeling of security that it has not changed shape. The finished inlay, if properly invested and correctly cast, will be perfectly seated in the cavity.—*Herman S. Rush, LaFayette, Tenn.*

Finishing Gold Inlays:—I get the best result when I do the final grinding, and coarse disking, or stripping with the inlay well-seated in the cavity before it is cemented. I grind, disc, or strip in a direction to draw the feather edge of gold toward the margins. If it is a proximo-occlusal inlay, after it is cut down to what is desired, remove and polish the proximal surface, clean thoroughly and wash it with alcohol and dry. Roughen the cavity side of inlay by scratching with a sharp pointed excavator to insure a better attachment of cement.—*G. W. Dittmar, Chicago.*

Manipulation of Cement:—I question whether the erratic behavior of the cements is not due, more to their manipulation, than to the inherent character of the material itself. Scarcely two operators will be alike in their treatment and manipulation of the material. It is but fair to the manufacturer that his instructions be followed to the letter. By reason of his close study, his wide experimentation, as well as his own direct personal interest, he is most desirous to bring out the very best of which his product is capable, and naturally knows best how to do it.—*C. B. Rohland, Alton, Ill.*

A Sterile Eye Bath:—An eye bath fashioned from a single piece of aluminum has recently been introduced. It is cleanly, unbreakable and can be sterilized instantly by dropping into boiling water. It will be found invaluable for treating ophthalmia, conjunctivitis, eye-strain, ulceration and all inflammatory conditions affecting the eye.

Drop into the eye bath ten to thirty drops of Glyco-Thymoline and fill with warm water. Holding the head forward, place the filled eye bath over the eye, then open and close the eye frequently in the Glyco-Thymoline solution. It is soothing, non-irritating and reduces the inflammation.—*G. W. J.*

Filling Root Canals:—I have not filled the root of a tooth or a pulp canal with anything but oxychloride of zinc for forty years. I do not recall a failure with that method of filling. I take a staple broach and put two layers of No. 10 gold foil around it, a very short roll of it, and fix it so that it will stay there, and the broach will come away when the gold is applied. I fill the root or canal with the oxychloride of zinc, carefully push the broach with the gold on the end of it into the cavity and slip the broach away. I feel the cement has not been drawn away from the place where I want it, and when I hear practitioners generally say they fill canals with chloro-percha and gutta-percha points I think it is an abominable practice. When you take out such fillings the odor from them is very offensive. —*J. N. Crouse, Chicago.*

Contraction of Cast Gold Inlays:— For the purpose of satisfying myself what the practical effect of contraction would be, I have made a large number of inlays for cavities prepared in blocks of ivory. These fillings were made with every known machine and every known investment, and in each case where the filling was of considerable size and the gold did not overlap the margins, the contraction was such as to leave a distinct fissure between the metal and one or more of the cavity walls. Consider a significant fact: When a large mass of metal contracts, the most marked contraction is in the greatest diameter of the mass of metal. Applying this to the cast inlay, I found that in making a filling for a mesio-occlusal cavity, there was a marked contraction at either the cervical or the disto-occlusal wall, or both.—*L. S. Tenney, Chicago.*

Non-Cohesive Gold for Fillings:—You can make use of any of the gold foils by exposing their surfaces to ammonia gas for a while. A good way to do this is to take several sheets of gold and place in a drawer of the cabinet, also a small dish in which a little ammonia is placed. It is best to expose the gold in this way a few hours before it is needed for use. The advantages of non-cohesive gold are: First, it is more rapid in use at the gingival third of the cavity; second, that by greater ease of manipulation it lessens the nervous strain on patients; third, its closer adaption to cavity walls; fourth, greater ease in finishing fillings at cervical margin; fifth, that you are surer the cavity margins are thoroughly sealed as you drive the entire mass, so that it adapts itself and does not draw away from the margins, or bridge over space as does the cohesive gold.—*C. E. Bellchamber, Effingham, Ill.*

Chemical Process of the Setting of Investments:—Take an investment and it has a certain amount of plaster in it, not much water, and at the end of say ten minutes it begins to set. Because the chemical affinities of that plaster have not been thoroughly satisfied, the moisture that is still in there would go on and change the chemical process of the setting of that plaster until tomorrow, when you would have a differently-shaped mass from what you had today. As soon as that mass has hardened by heating it you drive away the excess of moisture which would have a tendency by tomorrow morning or the middle of the next day to change its shape. By doing so, you have driven out the moisture and the result is an investment which is not going to change its proper form. All along these lines you should start in and work, and bring the results of your labors before the profession.—*William H. Taggart, Chicago.*

Cavity Preparation and Insertion of Amalgam:—Cavity preparation for amalgam should differ from that for gold, in that no marginal beveled edges should be left, as amalgam will not retain an attenuated edge, like gold, and this little error has often been the cause of failures. Another cause of failure in amalgam fillings is incomplete condensation and improper insertion. Large masses of amalgam in comparison with the size of the cavity and large pluggers with which to insert and condense the filling can not produce as satisfactory results as small masses and relatively small pluggers. The first pieces of amalgam placed in the cavity should be a little softer than those that follow, so that the softer pieces may readily be adapted to all pits, grooves or angles, and the subsequent pieces being drier than the preceding ones can, by trituration and packing, be united to those that have been placed before and a thoroughly homogeneous mass be the result.—*C. P. Pruyn, Chicago.*

A Method of Crowning a Split Root:—Occasionally a porcelain crowned root of one of the six anterior teeth splits as far along the length of the root as the post of the crown extends. This usually leaves a portion of the apical end of the root intact so that by removing the loose portion of the root and carefully enlarging the canal, a post can be fitted in that part.

A narrow banded platinum cap is then fitted over the remaining portion of the cervical end and cap and post soldered together.

The post of course will be entirely outside of the band and if necessary should be bent to bring in direct contact with it.

Wax is next placed over the cap and post on the side representing the lost portion of the root and accurately contoured to the original shape. After removing cap and post with wax in place, it is invested for cast gold. After casting a suitable facing can be ground in place and the operation completed as a Richmand Crown.

This operation can be carried out in all porcelain crowns where conditions are favorable, by forming a floor of 45-gauge platinum plate over the fractured portion of the root, soldering to the cap and post, and contouring with porcelain.—*T. H. McClure, Chicago.*

MEMORANDA.

ILLINOIS EASTERN HOSPITAL FOR THE INSANE.

DENTAL WORK FOR JULY, 1908.

Plates, 0; gold fillings, 5; gold crowns, 5; cement fillings, 2; amalgam fillings, 60; treatments, 41; extracted, 40; cleaned, 9; teeth with roots filled, 15.

Dr. G. A. Mills.

MISSOURI STATE DENTAL ASSOCIATION.

At the forty-third annual meeting of the Missouri State Dental Association, held at the Planter's Hotel, St. Louis, the following officers were elected for the ensuing year: J. B. McBride, Springfield, president; R. E. Darby, Springfield, first vice-president; E. P. Dameron, St. Louis, second vice-president; H. H. Sullivan, Kansas City, recording secretary; J. F. Wallace, Canton, corresponding secretary; J. T. Fry, Moberly, treasurer. Meeting of 1909 to be held at Kansas City.

J. F. Wallace,
Corresponding Secretary.

DENTAL SOCIETY OF HAWAII.

The autumn meeting of the Dental Society of Hawaii will be held October 29 on the brink of the crater, Kilauea, "The greatest active volcano in the world."

The proceedings will be conducted under the broad canopy of heaven and by the fiery glow of the molten lava. Kilauea is situated on the slopes of Mauna Loa, at four thousand feet elevation and in the heart of a tropical forest. The scenery and climate is unexcelled.

Thirty dollars is the special round trip rate for the trip from Honolulu and return, and includes all necessary traveling and hotel expenses. The excursion leaves Honolulu on October 27 and returns on the 31st.

A cordial invitation to join with us is extended to all ethical dentists from anywhere and everywhere.

F. E. Clark,
Secretary.

RECENT PATENTS OF INTEREST TO DENTISTS.

891,651. Dental tool. J. H. Abbott, Philadelphia, Pa.

891,762. Dental chair. F. E. Case, Canton, Ohio.

891,600. Means for attaching crowns to roots of teeth. C. A. Davis, Pasadena, Cal.

891,689. Mold for making dental plates. J. W. Greene, Chillicothe, Ohio.

891,543. Dental tool. E. Y. Haughawout, Cedar Rapids, Neb.

892,040. Dental articulator. J. C. Fisher, New York, N. Y.

892,860. Chin support. C. J. Lewis, Kanawha, Iowa.

892,682. Mouth prop. R. S. Price, Rochester, N. Y.

893,155. Dental bracket table. P. W. Evans, Washington, D. C.

893,345. Floss-holder attachment for tooth brushes. O. J. Monson, Chicago, Ill.

895,293. Dental mirror. J. A. Wright and A. M. Nicodemus, Chicago, Ill.

893,617. Artificial tooth. T. Flintoff, Claremont, Western Australia, Australia.

893,665. Dental broach covering mechanism. R. Siegel, Cincinnati, Ohio.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

DENTAL MANUFACTURERS' EXHIBIT.

Arrangements have been completed for the next Dental Manufacturers' exhibit, to be held at the Hotel Sinton, Cincinnati, Ohio, on October 27, 28, 29 and 30.

Cincinnati was chosen for this exhibit for the purpose of giving the dentists in the central states, who could not attend the exhibition held in March, in New York, an opportunity to attend this one

The product of the leading dental manufacturers of the United States is fully demonstrated at these exhibitions, among them being the latest inventions in all lines of dentistry and they are not only interesting but educational.

No expense is spared to make these exhibitions a success and the location of the October exhibition is exceptionally good, being in the best hotel in the city.

Special arrangements have been made for the comfort and entertainment of the lady visitors, and the four days spent in the city can be filled in a most beneficial and interesting manner.

There is no fee of admission, buttons being furnished on application at the registration desk, admitting the wearer to the exhibition hall and clinics at all times.

All dentists and their families are invited to attend and special hotel arrangements are being made for the out-of-town guests.

WISCONSIN STATE DENTAL SOCIETY.

The Wisconsin State Dental Society held its annual meeting July 21, 22, 23, 1908, at La Crosse, Wis. The convention was one of the most profitable and enjoyable in its history. The society was reorganized and the following officers elected:

President, W. H. Mueller, Madison, Wis.; first vice-president, G. F. Hauser, La Crosse, Wis.; second vice-president, E. A. Geilfuss, Goldsmith, building, Milwaukee, Wis.; secretary, Harvey N. Jackson, Wells building, Milwaukee, Wis.; treasurer, Adolph Gropper, Goldsmith building, Milwaukee, Wis.; librarian, H. G. Morton, Mack block, Milwaukee, Wis. EXECUTIVE COUNCIL, W. H. Mueller, Madison, Wis.; Harvey N. Jackson, Milwaukee, Wis.; Adolph Gropper, Milwaukee, Wis.; A. J. Du Bois, Neenah, Wis.;

Geo. C. Marlow, Lancaster, Wis.; E. C. Oviatt, Columbus, Wis.; E. C. French, Eau Claire, Wis.; W. C. Wendel, Milwaukee, Wis.; T. A. Hardgrove, Fond du Lac, Wis.; Charles Southwell, Milwaukee, Wis.; E. A. Gatterdam, La Crosse, Wis.; W. A. Gamble, Fox Lake, Wis. PROGRAM, Chas. L. Babcock, Colby & Abbott building, Milwaukee, Wis. CLINIC, Chas. Southwell, Goldsmith building, Milwaukee, Wis. LOCAL ARRANGEMENTS, E. A. Geilfuss, Milwaukee; A. A. Jennings, Milwaukee; Geo. P. Brenner, Milwaukee. SCIENCE AND LITERATURE, Arthur Holbrook, Milwaukee. ART AND INVENTION, F. S. Robinson, Chippewa Falls, Wis. PUBLICATION, R. R. Powell, Janesville, Wis.; M. L. Christensen, Oshkosh, Wis.; Harvey N. Jackson, Milwaukee, Wis. BOARD OF CENSORS, F. G. Van Stratum, Hurley, Wis.; Franklin R. Houston, Green Bay, Wis.; B. C. Campbell, Lake Geneva, Wis. INFRACTION OF CODE OF ETHICS, J. L. Malone, Superior, Wis.; E. J. Hart, Madison, Wis.; C. T. Rodolf, Muscoda.

CHICAGO-ODONTOGRAPHIC SOCIETY.

Fred W. Gethro, president, Chicago.
F. H. Zinn, secretary, Chicago.

The following is an outline of the program arranged for the coming year. Meetings are held on the third Tuesday evening of each month.

September—Operative Dentistry Quiz. In cast fillings, is there enough contraction in the mass of metal to have an appreciable effect on the completed filling? Should the margins of cavities for gold inlays be beveled; if so, to what extent?—G. W. Dittmar. When should pulps be capped, and by what method? Should the rubber dam be adjusted for the cementation of inlays?—H. I. Van Tuyl. Why do some authorities recommend the use of non-cohesive gold at the gingival line? How can you account for the rapid decay in the mouths of foreign girls who have been in America but a year or two?—C. N. Johnson. Conditions of saliva in relation to caries. The value of the contact point.—G. V. Black. What material holds first place in the treatment of dental caries?—W. H. Taggert and L. S. Tenney. How treat superficial dental caries?—A. F. James. The legitimate field for porcelain inlays as shown by our past experience with them.—W. D. N. Moore. The advantages or disadvantages of placing a lining or intermediate of cement under amalgam or gold fillings. Is it necessary or best to disinfect the dentin under a large filling in a vital tooth, or will the bacteria be destroyed by hermetically filling the tooth?—Elgin MaWhinney. What mouth conditions may cause facial neuralgia?—F. B. Moorehead.

October—C. B. Rohland, of Alton, will read a paper on "Our Little Patients."

November—Forty or fifty table clinics.

December—A symposium, "The First Permanent Molars." From the Viewpoint of Orthodontia.—L. S. Lourie. Development and Pulp Treatment. —F. B. Noyes. Filling Previous to Full Development and Afterwards.—C. N. Johnson.

January—Dental Economics and Ethics. Election of officers.

February—"Dental History," illustrated by lantern slides.—Chas. McManus, of Hartford, Conn.

March—"Diseases of the Soft Tissues of the Mouth."—T. L. Gilmer. Treatment of Same.—Wm. Allen Pusey, M. D.

April—A symposium on "Pathology and Treatment of the Peridental Membrane."—Elgin MaWhinney, G. V. Black and Geo. W. Cook.

May—Prosthetic Dentistry Quiz.

DON. M. GALLIE, Chairman,
ARTHUR D. BLACK,
JAMES P. SMITH,
Program Committee.

THE

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GENERAL CONSIDERATION OF SYPHILIS WITH SPECIAL REFERENCE TO DIFFERENTIAL DIAGNOSIS BETWEEN SYPHILITIC AND NON-SYPHILITIC LESIONS AS MANIFESTED IN THE MOUTH.

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Syphilitic manifestations that occur on portions of the body other than the head and neck and involving the oral cavity need not concern us in this essay, which only assumes to deal briefly with the general question of syphilis.

Acquired syphilis is a chronic infectious disease, which fact is established by the knowledge that it is only transmitted when the syphilitic virus is conveyed from an infected individual into the system of a non-syphilitic person by either the mediate or immediate route. Since its course and its capabilities of indefinite multiplications in the human body only occur after introduction of the virus into the system in this form of syphilis, this fact tends to make us feel sure that a syphilitic organism is the causative factor; yet no investigator has isolated and cultivated the specific organism to the entire satisfaction of the dental and medical professions. The poison through whose inoculation human syphilis is produced is propagated within the human organism, where it is with few exceptions alone reproduced, and when implanted in the human system it excites inflammatory processes of the most varied extent and intensity.

In my descriptions of the manifestations of acquired syphilis, I will divide them into the customary first, second and third stages,

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*Read before the Illinois State Dental Society, Springfield, May, 1908.

however not so much because I believe such divisions are demonstrated in many cases or that the spoken of periods of rest between these stages are always seen, but holding to the old classifications to avoid departing from an established custom.

It is assumed that syphilitic infection only occurs when the virus is brought in contact with an abraded surface of the skin or mucous membrane by direct or indirect transfer, yet the likelihood of contamination of the human economy through some unabraded mucous membrane where the virus is allowed to remain upon a shielded location for a long period, cannot be dismissed as an impossibility.

Assuming that this form of infection has been brought in contact with an abraded surface of the lip, skin or mucous membrane about the vermillion border through the act of kissing or by drinking from a broken utensil or the use of a pipe or handkerchief that has been contaminated with the syphilitic virus, or from the physician's or dentist's instruments or fingers that have had the infected secretions from the mouth of a previous patient dried upon them; the syphilitic virus having gained entrance into the system by any one of the direct or indirect modes of transfer spoken of, we will have developed at the seat of infection a local manifestation as represented in slide No. 1, which in form and time of occurrence is characteristic and to a great degree diagnostic of this disease. This initial lesion is always local and only single in its manifestation except in those rare cases where the virus has entered the body in more than one place at the same time. This resultant lesion is known as the

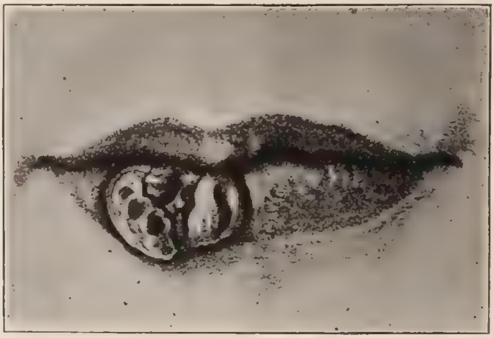

Fig. 1.

hard chancre, which as a rule develops in three to six weeks after infection. This tissue becomes infiltrated with small, round connective tissue cells, and with these small, round cells are also to be seen large, round or oval wandering connective tissue cells, filling up the tissue spaces to such an extent that they interfere with the normal function of and nourishment to the part. And the overlying tissue takes on a discoloration that is slightly dusky and the normal thickness of the lip in the area is increased and slightly elevated with smooth and glazed walls of tissue that in most cases surrounds a cartilage-like mass that seems free in the tissue when examined between the thumb and finger. The exudate in the meshes of the cellular tissue is so abundant that a certain small but well defined area becomes practically solid, but which has a freedom of movement that is not common to any other diseased condition found in this particular location.

The patient usually does not complain of any pain or even a slight discomfort from the developing chancre until the process of ulceration begins, which is in about four to ten days after full development. The superficial cells ulcerate, with necrosis of the central area quickly following, and a copious and highly infectious discharge now comes from the crater-like opening that is forming on the lip.

After the indurated, cartilage-like mass has been cared for by necrosis and putrefaction, we find the healing process begins, and the lost area is filled in with embryonic tissue that may as it grows old temporarily form some scar tissue; but when the process of regeneration of the lost area is completed, we find no characteristic scar remaining.

As the chancre develops and begins to break down, we observe the lymphatics nearest the point of initial infection being extensively involved, and this lymphatic induration marks the opening of the second period of incubation, or systemic manifestation of this disease.

Characteristic symptoms of the second stage in a typical case of acquired syphilis, with special reference to the oral lesions. The period intervening between the developing chancre and the occurrence of the systemic symptoms of skin and mucous membrane eruptions is called the second incubation period, and is of about six weeks' duration. The systemic infection passes from the point of initial entrance throughout the entire system[1] by means of the lymphatic and blood channels. We note the lymph capillaries especially taking up the greater part of the tissue fluids flowing back from the periphery and uniting to form large vessels, and carrying the virus to the nearest glands. The returning blood vessels and veins also no doubt take up the virus from the induration and carry it to the rest of the body but in the case of the lymphatics we have clinical and histological proof of the rôle they play in disseminating this infection. First we see the glands in the immediate area progressively becoming involved, as seen in slide No. 2, at a point just beneath the mandible on the right side, and it is not exceptional to find most all of the glands of the entire body that can be palpated, slightly affected.

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[1] Banks, after Mracek.

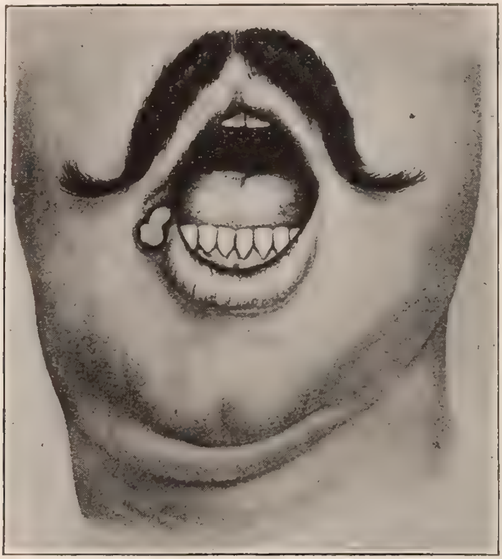

Fig. 2.

As the entire system is gradually becoming contaminated with the virus during the second period of incubation, the patient may or may not notice any variation in his general health. However, in about fifty per cent of the cases pronounced subjective symptoms occur before any of the eruptions common to the secondary stage present on the skin or mucous membrane. In those cases where pronounced subjective symptoms do occur, we see quite profound general depression and a fever of one-half to two degrees in the evening in a few cases; fleeting pains about the face and joints, pronounced headache, and all of these disturbances more severe at night.

General Secondary Symptoms of Acquired Syphilis.—The prodromal manifestations just described having presented, or, in case of their absence, a sufficient duration of time having elapsed, which in an average case will be between one and two months, we find the macular, papular and pustular eruptions coming over the entire body. Slide No. 3 is a view of a syphilitic patient, showing the skin in full eruption, with the papular and pustular disfigurements common to this period of the disease where no treatment has been given to check its characteristic markings. We do not find so many or frequent eruptions coming on the face as upon the scalp and eyelids and on the neck just below the hair.

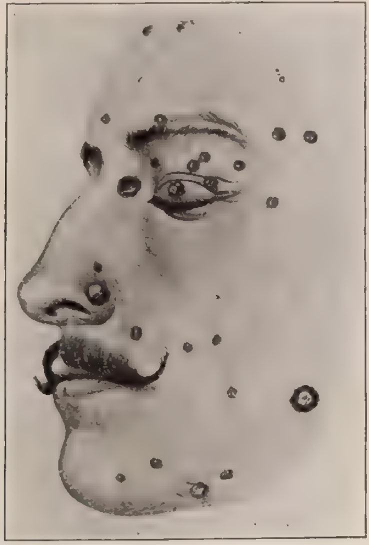

Fig. 3.

These lesions heal with or without treatment, as do practically all of the secondary lesions, without leaving a characteristic scar, and because of this knowledge the fact is ofttimes overlooked that a secondary syphilitic affection may occur and leave a scar which can be recognized so long as the patient lives as pathognomonic of syphilis. Slide No. 4 shows this form of eruption appearing during the second stage as one of the late manifestations of this period, and is known as "rubia" or the "rubial syphilide" that are large, pustular eruptions which terminate in ulcers that have formed over them oyster-shell-like layers of crusts as seen in the slide before you. This process gradually improves and leaves behind it a dead-white circular cicatrix with a rim of pigment. The white, wavy, characteristic line only involves the skin and is in appearance and thickness like tissue paper, and when examined folds similarly. No other systemic disease or skin lesion leaves such a marking, and the only way a like scar is ever seen to be produced is from a splash of molten metal. These systemic markings, if they be present, are most frequently found on the sides and back of the neck just below or at the border of the hair.

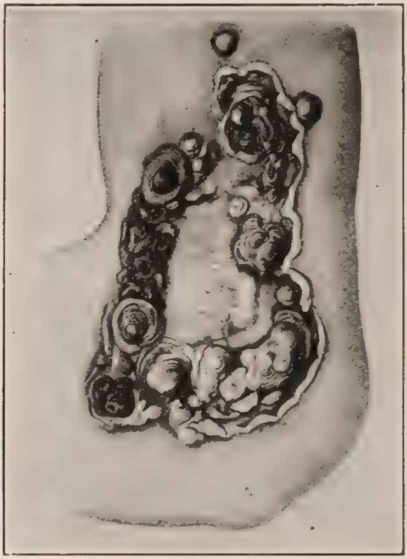

Fig. 4.

Besides these eruptions, and involvements of the eyelashes, brows and hair, the general involvement of the lymphatics and the induration of these glands in the second stage are found to be bilateral, yet those nearest the point of original infection are by far most extensively involved at first. Red blotches may appear upon any portion of the surface of the body, and are especially prone to occur on the soles of the feet and palms of the hands.

Oral manifestations of acquired syphilis that occur during the second stage.—We find presenting upon the mucous membrane of the oral cavity eruptions quite similar to those seen on the skin.[2] The first oral manifestations of the secondary stage of syphilitic infection is the appearance of a general dull red erythema involving the entire fauces. This erythema soon fades, leaving symmetrically disposed erythematous spots on both sides of the palate, the walls of the pharynx, the pillars of the fauces and the sides of the tongue. These mucous plaques or patches are among the earliest and most constant eruptions coming during this stage.

The areas next involved are those subjected to irritations from rough or sharp surfaces found upon carious teeth or broken down roots, therefore we expect the eruptions to occur on the borders and tip of the tongue as well as the buccal mucous membrane, as seen in slide No. 5, or upon the tissues forming the hard and soft palate as represented in slide No. 6, while slide No. 7 shows the mouth of a syphilitic patient with the mucous patches in full development, and if one examines these patches closely as seen in the slide before us he will observe the characteristic sharp line of demarkation between

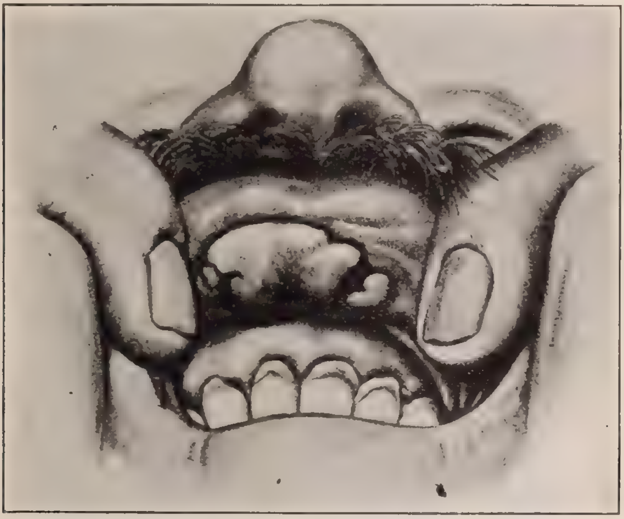

Fig. 5.

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[2] L. Blake Baldwin, "Syphilis in Dentistry."

the healthy and diseased tissue of the mucous patch proper with no extended inflammatory area about it in these uncomplicated patches. This development is more frequently accomplished without pain than

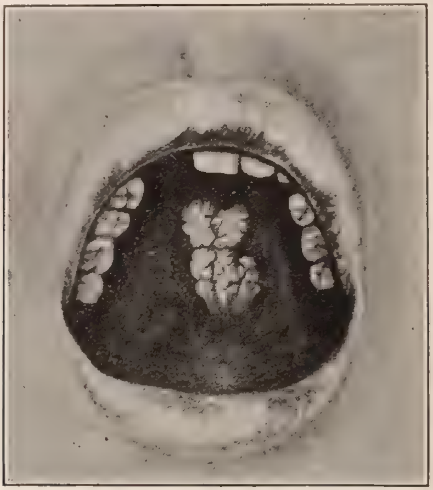

Fig. 6.

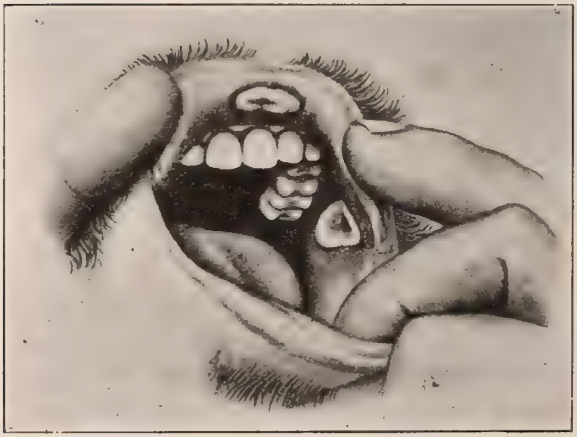

Fig. 7.

with it; in fact, ofttimes the patient is not aware of the number present. Little if any increase in the activity of the mucous or salivary glands is observed unless an exceptional amount of disturbance accompanies their development.[3] The mucous patch when covered with the normal secretion has a peculiar opalescent, whitish hue, due to the proliferation of the moist epithelium, and frequently through irritation or mixed infection it ulcerates superficially at the center, where they are of a dirty-red varnished appearance, with slightly thickened margins where this thickened epithelium is adherent.

The oral and mixed secretions as well as the thin, viscid watery fluid secretion from the ulcerated surfaces of these plaques, and blood, is highly infectious during this stage, yet as a matter of interest it may be well to state that the normal saliva as it forms in the glands is uncontaminated with the syphilitic virus, and the same is true of the kidney and skin secretions when forming. However, please understand me as saying that the oral secretions are highly infectious during this period.

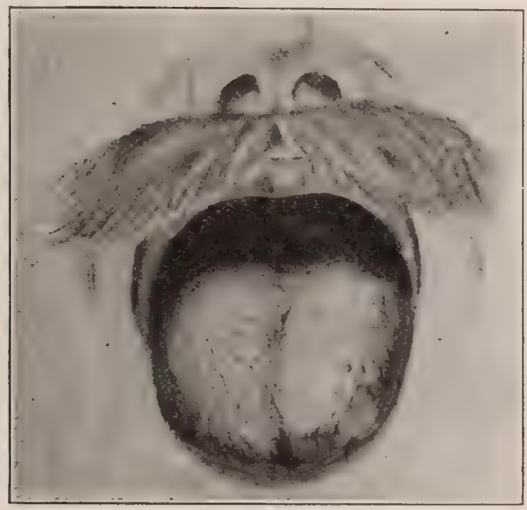

Fig. 8.

Some glandular involvement always co-exists with the mucous patches that accompany the skin eruptions common to this stage, but one must ever keep in mind that mucous patches do recur months, yes, years after all secondary symptoms have subsided, and that they are not immediately preceded or accompanied by any other symptom characteristic of syphilis except glandular involvement, yet the secretions forming over their surfaces are capable of syphilitic infection. These recurring plaques are most often found upon those areas of the mucous membrane that are subjected to an unusual amount of irritation from rough points or the persistent holding of a pipe-stem. The longer the elapsing period since the initial lesion or hard chancre the less secretion is found forming over the plaque surface, and in the very old cases the patch is found to have a smooth, shiny surface and is bluish-white in color, that is likened to the condition known as leukoplakia or "smoker's patch," as seen in slide No. 8, which shows the tongue on its left anterior margin to be covered with a shiny, bluish-white patch, and situated a little posterior we observe a few elevated masses covered with a shiny. bluish-white area. This patient is forty-two years old, had syphilis in his youth, and is a constant smoker.

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[3] Victor C. Pederson.

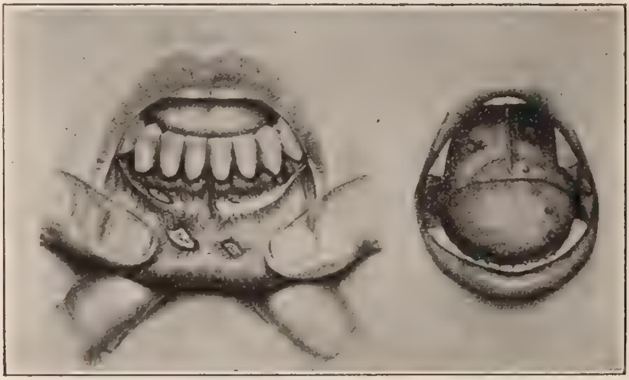

Fig. 9.

The differential diagnosis between these late recurring mucous patches and simple leukoplakia, if in fact it would be possible, is indeed difficult, and by some authors it is maintained that all forms of leukoplakia are of specific origin.

The early mucous patch differs from leukoplakia in that an excessive amount of secretion comes from the surface of the mucous patch, and when wiped dry has a varnished, raw-meat appearance, and its duration is short, often occurring on the under surface of the tongue and accompanied by glandular enlargement, and has no carcinomatous tendency. Leukoplakia is of long duration, and when the glands are involved it comes very late; never seen on the lower margin of border and under surface of the tongue, frequently develops into an epithelioma.

In slide No. 9 we have reproduced the mouths of patients that are suffering from acute catarrhal inflammation. The picture to the right is a mouth where we see the characteristic formation of the aphthous ulcer. The other represents that form of mucous membrane involvement that frequently follows prolonged fevers and in imperfect nourishment or extensive mercurial intoxication.

When one of our profession is called upon to differentiate between some of the lesions of stomatitis and the syphilitic mucous patch, with the rest of the body covered and the patient aimost invariably opposed to having the truth known in case the condition is specific, he is confronted with a problem that is both delicate and difficult in the extreme, yet an accurate diagnosis is not only essential, but imperative for his own safety as well as that of his other patients. So let us turn our attention to differentiating between the syphilitic patch that is ofttimes mistaken for certain forms of stomatitis that are not specific in origin, and other lesions that may be similar in appearance.

In the syphilitic patch we observe a sharp line of demarkation between the diseased and healthy tissue, while about the non-specific lesion in acute catarrhal stomatitis or an aphthous ulcer now on the screen before us, we see a gradual fading of the inflammatory process from the diseased into the healthy tissue, and these non-specific ulcerations are saucer-shaped areas in their formation. While the specific ulcers are found to form pouch-shaped openings with indented bases overhanging margins and the surface of this crater-shaped cavity is covered with a secretion which if wiped off leaves a varnished, raw meat appearance not seen in non-specific lesions. Greatly increased oral secretions and pain accompany the development of the non-specific lesions of stomatitis. In the usual case of non-specific stomatitis no glandular enlargement nor definite location of the diseased areas is seen. In syphilitic lesions slight if any increase in the oral secretions occurs unless we have a mixed infection to deal with, and as a rule little or no pain accompanying their development, the patient frequently unaware of the number present and complains of pain only in the evening if at all.

Pronounced glandular enlargement accompanies all the early syphilitic eruptions, and a few telltale ones are found accompanying even the very late secondary lesions. The location of diseased areas is quite definite. These localities are the tonsils, soft palate, margin of the tongue, and those surfaces of the cheek and gums that may be subject to excessive irritation by the action of sharp edges of teeth or the wedging of food in the approximal surfaces. Because of this fact one of our first duties is to remove such teeth that cannot be made ultimately useful, and precautions taken to prevent the continued impact of food between adjacent teeth, because slight local irritation gradually increases the number and duration of the existence of mucous patches. The dental organs must be kept free from deposit, thus establishing a condition that will allow the attending physician to carry his specific treatment along more rapidly and successfully.

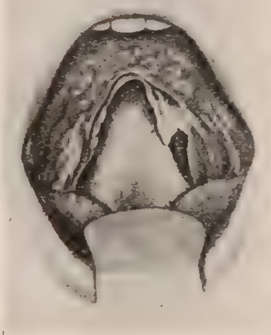

Fig. 10.

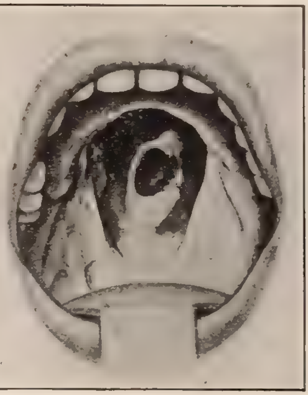

Fig. 11.

The third stage, or the tertiary form of syphilis.—In the symptoms occurring during the tertiary or third stage we have the final lesions of a disease whose history is almost continuous with the life of the patient, although its periods of manifestations may be years apart. However, if proper treatment be immediately and persistently administered throughout life, the tertiary lesions can as a rule be avoided. In fact, 88 per cent of acquired syphilitic cases terminate with the final secondary symptoms.

As to the exact time the tertiary symptoms occur if they present, no definite statement should be made, because they do in a small per cent of cases co-exist with the symptoms common to the second stage, or they may be delayed twenty or thirty years with no intervening prodromal symptoms. However, in the majority of cases if tertiary lesions occur, they are found developing between the sixth month and sixth year after the active secondaries have subsided.

From a dental aspect the most important manifestations of this stage are the tumor-like developments that are known as gummata, that frequently attack the palate (Slide No. 10), tongue and mandible. Slide No. 11 shows the characteristic destruction of the soft and hard palate by the formation of such gumma, and our final deformity is usually a round perforation involving bone and soft tissue that is located about midway between the anterior teeth and uvula, and situated quite accurately in the dome of the palate. The presence of such a deformity is pathognomonic of tertiary syphilis.

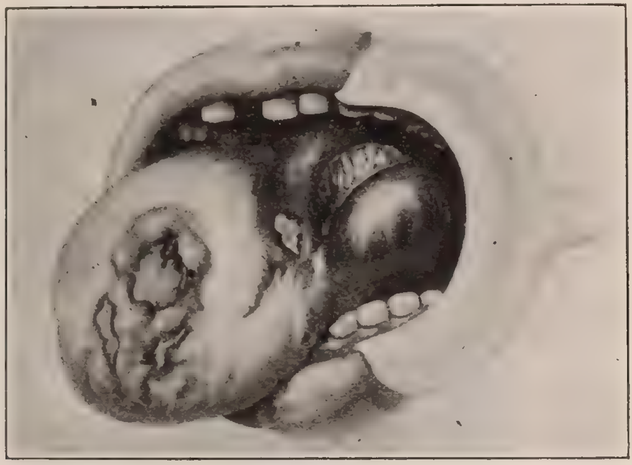

Fig. 12.

Slide No. 12 is the condition of the tongue that unfortunately is too frequently mistaken for epithelioma instead of being recognized as a lesion common to this disease in the tertiary stage, known as gumma of the tongue. Epithelioma and gumma of the tongue differ in that the epithelioma, broadly speaking, develops slowly and always begins on the margin of the tongue, is single in its occurrence, and before as well as after it begins to break down lancinating pain is found to be a constant accompaniment. Also the odor of the escaping secretion, the presence of cachexia, and the glandular involvement, are all characteristic of epithelioma of the tongue. There is greater decrease in mobility of the tongue from epithelioma than when involvement with gumma occurs. In syphilis we usually see multiple lesions occurring on the under surface and dorsum of the tongue, as shown in slide No. 10, and frequently reaching full development, without much pain, in ten to fifteen days. Nor does pain of a pronounced character co-exist as the necrotic process begins to destroy the gumma almost in its entirety, which establishes a condition that never occurs in case of epithelioma of the part.

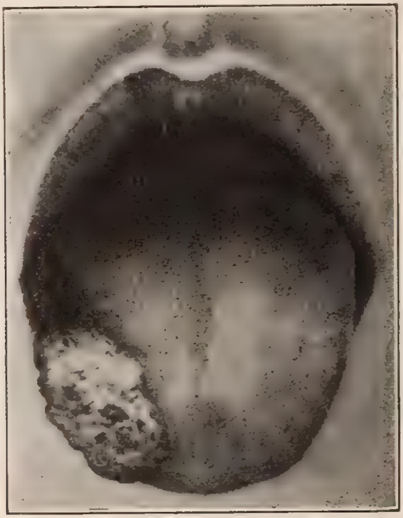

Fig. 13. Epithelioma of Tongue.

My idea in discussing this question before the Society is not that I hold it to be the dentist's duty to systematically treat this disease, but I do hold that it is the duty of every dentist to so equip himself that he shall be able to immediately differentiate the syphilitic from a non-syphilitic lesion in such cases as it is possible to do so, and the more one sees and studies this prevalent disease with its varied and complicated manifestations, the more sure he becomes that no man can always positively differentiate without treatment every syphilitic from a non-syphilitic condition.

And now, if the above statement be true, and I assure you that it is, no dentist has a moral or legal right to employ instruments that may abrade or penetrate any of the oral tissues, that have not been sterilized by any process that will accomplish the same end as would boiling them for fifteen minutes. These syphilitic individuals can be cared for with impunity if the operator protects his hands with rubber gloves and then scrubs all the instruments employed and boils them for fifteen minutes. If this plan is pursued there is no need of such absurd action as is often recommended—that all such instruments should never be used again but thrown away.

My advice to the young men of the profession is that in case of doubt about a lesion, always assume that it is a syphilitic infection that you have before you, but do not say so to the patient until you are sure of your diagnosis.

If as a result of the reading of this paper I have instructed even a few of the small number of dentists and physicians that have not in the past realized the gravity, danger, and ease of transmission of this dreadful disease, I wish to assure you that I feel more than well repaid for my efforts.

A PRESENTATION OF SOME CONDITIONS OF CARIES OF THE ENAMEL.*

BY FREDERIC B. NOYES, B. A., D.D.S., CHICAGO.

In the present paper I expect to present nothing that is original. In the course of the preparation of the illustrations for Dr. Black's book certain phases of caries have specially impressed me in a way to largely change my conceptions of the process, and the character of the injury to the tissues. A true appreciation of many of these conditions seems to me of the greatest practical value in the treatment of caries, and that they have not been appreciated or understood is apparent in the writings of many authors. It is my purpose to present some of the illustrations that have brought new understanding of the progress of caries, and the new ideas of the character and extent of the injury to the tissues. The extent and character of the injury to the enamel and dentin which may exist as the result of caries without disturbance of the contour of the tooth's surface, or the presence of a cavity has been like a revelation, and has brought a new sense of obligation in the examination of the teeth, especially of young and susceptible patients, for as the study of the subject progresses it becomes more and more evident, that for the best interests of the patient caries should be intelligently treated in its early rather than its later stages.

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*Read before the Illinois State Dental Society, May, 1908.

That the enamel is composed of two structural elements—enamel rods or prisms and cementing substance—has been known since the time of John Tomes, but we are just beginning to place the full value on the knowledge and to reconstruct the original notions. John Tomes considered the enamel rods as calcified cells, and the cementing substance as calcified intercellular substance. He believed that in the formation of the tissue the ameloblasts or epithelial cells which form the enamel were directly transformed into the enamel rods, and the intercellular substance between them became the cementing substance between the rods. The work of Williams, Charles Tomes and many others has shown, however, that the process is not so simple. Their work has, I believe, established the facts that the enamel rods and cementing substance are both formed by the

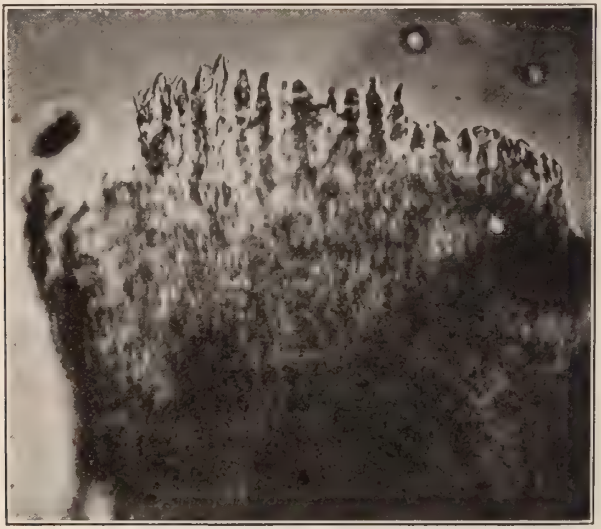

Fig. 1.

activity of cells. That they may even be formed by different cells is suggested by the fact that in pathological conditions of the enamel we find the formation of one element without the other. For instance, in the white spots in the enamel there is a more or less complete failure of the cementing substance, but perfect rod formation; in the pits of atrophy there is complete failure of rod formation and more or less perfect formation of the cementing substance. While both the rods and the cementing substance are composed of inorganic salts they are not of the same chemical character. The cementing substance is more soluble than the substance of the rods. This difference in the solubility must be recognized before caries of the enamel or its effect on the tissues can be understood.

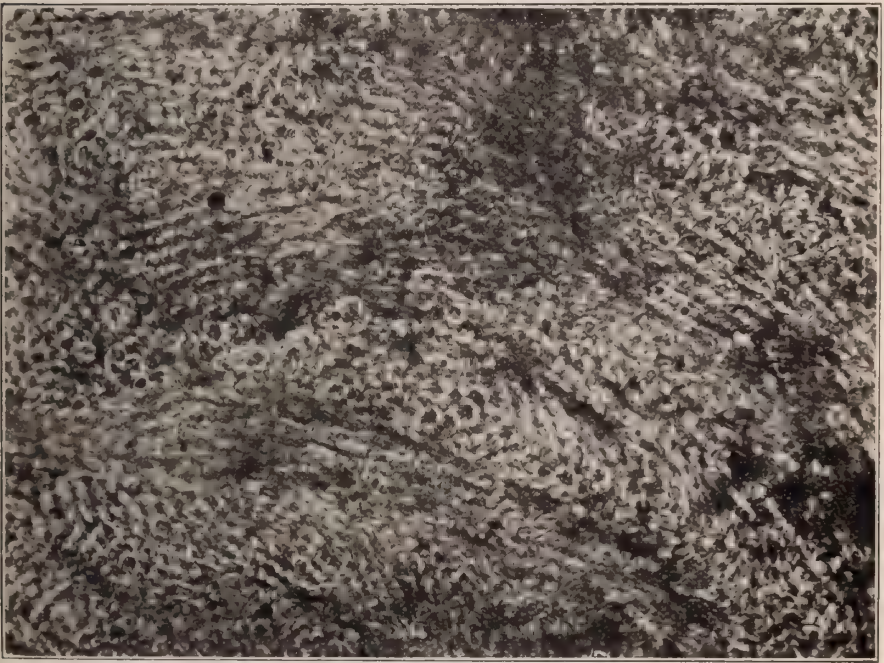

Fig. 2.

If a thin section of the enamel cut longitudinally or in the direction of the rods is mounted in water under a cover-glass, and acid is added (Fig. 1), it will be seen to attack the cementing substance, separating the rods from each other, and dissolving away their sides leaving the points projecting from the surface like the pickets of a fence. If a section is ground across the direction of the rods, mounted in glycerin and photographed (Fig. 2), the outline of the rods can be made out only with difficulty, as the cementing substance and the rod substance are so nearly the same refracting index. If the section is now removed from the glycerin, placed in 2 per cent hydrochloric acid for thirty seconds, washed, remounted and photographed, the rods will be seen distinctly outlined (Fig. 3). The cementing substance has been dissolved more rapidly than the substance of the rods, etching the surface and refracting the light as it passes through the section. This etching is constantly made use of in the preparation of sections for the study of enamel rod directions. If a broken surface of the enamel is lightly scraped with a chisel the enamel rods will be broken away from its surface and if these are mounted in a drop of water and examined under the microscope with compara-

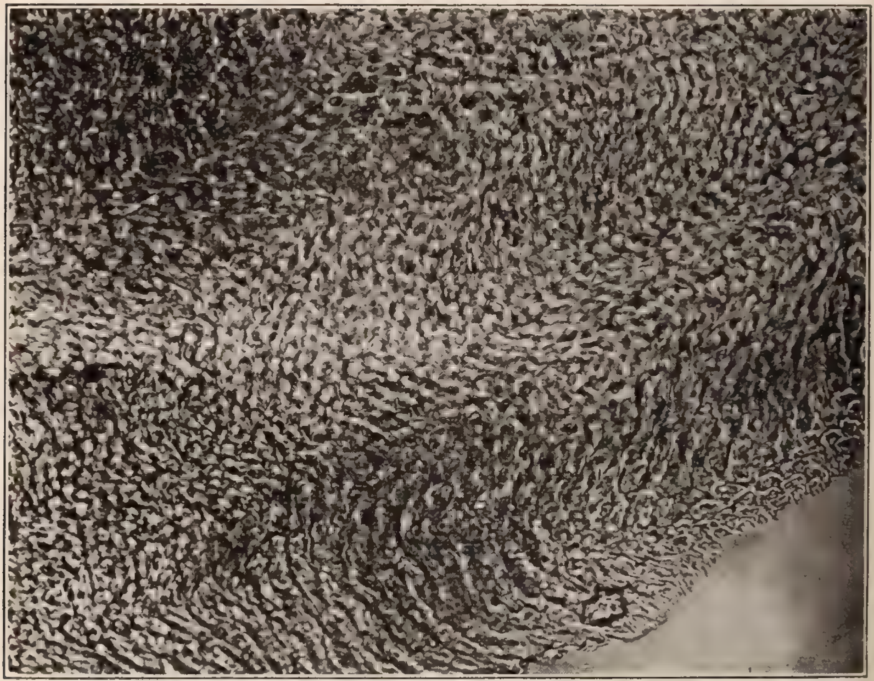

Fig. 3.

tively high magnification they will be seen to show a slightly irregular outline and alternate light and dark transverse markings or striations. Where rods are lying in clusters the dark markings in the adjoining rods will come opposite to each other. If we treat these with acid the unevenness in diameter and the distinctness of the cross markings will be increased. If we scoop the debris from the carious cavity the fragments of enamel will show the action of acid in the distinctness of the striations and the rounding of the ends of the enamel rods. It is not difficult, therefore, to demonstrate the difference in solubility between the substance of the rods and the cementing substance, but the effect upon the tissues may be very different under different conditions. With dilute acid the cementing substance seems to be much more rapidly attacked than the rods, and the difference in solubility appears to increase with the degree of dilution. For instance, if very dilute acid is applied to the surface of the enamel it will attack the cementing substance, dissolving it from between the rods all the way to the dento-enamel junction before the rods are destroyed, but if the acid is more concentrated the solution of the enamel rods from their sides will entirely destroy them before the solution of the cementing substance has reached the dentin. With an understanding of the action of acid on the enamel, therefore, the appearance of the tissue becomes an index of the intensity of the carious process.

The study of the positions of beginning caries is an important problem of the dentist and his real success in the treatment of patients will depend equally upon his technical skill and his study of the manifestations of the disease in the mouth. Caries first appears in the occlusal grooves and pits of the enamel where the arrangement of the tissue furnishes ideal conditions for the process. Because of the favorable conditions caries here presents the greatest intensity as will be seen later, but the problem of treatment is in its simplest terms and resolves itself to a remedy of the structural defect. Upon the smooth surfaces caries begins in protected areas and the study of the areas of liability and immunity is the first factor in determining the positions of cavity margins. Certain general rules can be laid down, but it must be remembered that these are like natural laws, the statement of observed facts. There are two possible bases for practice. The accepting of general rules laid down by a close observer, or the development of the powers of observation and judgment which are the basis of the rules. The latter should be the attitude of the practitioner, and it is what redeems dentistry from utterly wearying mechanical performance. Each case becomes a new problem presenting many and complicated factors to be weighed in determining the proceedings. The study of the positions and appearance of beginning caries on the surface of the enamel impresses the idea that particular points of the tooth surface are not vulnerable from any inherent quality of their own, but because of their environment. That they are areas of liability in proportion as they are areas of protection.

The occlusion, the anatomical forms of the teeth, the relation of the contact points, the relation of the soft tissues, the masticatory habit of the individual, the systemic condition with relation to the causes of caries, become factors in determining the size and shape of the areas of liability in any individual case. Therefore in the illustrations you will find some variety in the forms and positions and a knowledge of these can only be gained by observing the conditions that are presented in the mouths of our patients. The presentation of such illustrations, therefore, becomes valuable, not only for the facts they present, but in stimulating observation of condidtions as the basis of treatment.

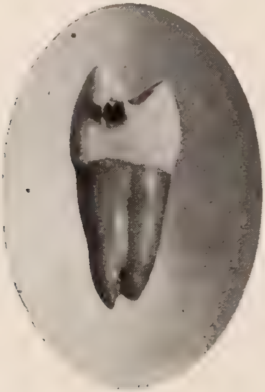

Fig. 4.

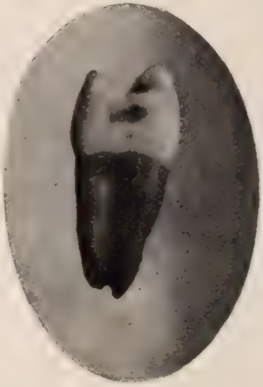

Fig. 5.

Figure 4 shows the proximal surface of a bicuspid, in which the area of attack is far occlusally and narrow bucco-lingually.

Figure 5—The area is larger and farther gingivally.

Figure 6—The area is still larger and is in nearly the center of the surface.

Figure 7—The area is very broad bucco-lingually and shows several points of penetration, indicating favorable local and systemic conditions.

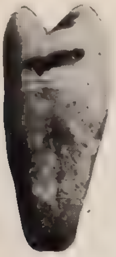

Fig. 6.

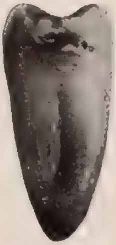

Fig. 7.

Figure 8—The area is much farther to the gingival and shows that there have been periods in which progress has been arrested and between those periods the area of liability has moved gingivally. For a new area of surface attack can be seen in the whitened surface beyond the darkened surface.

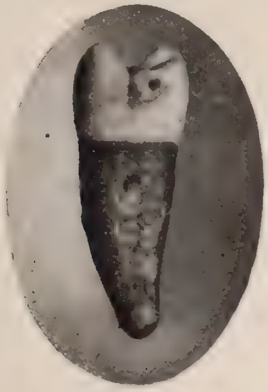

Fig. 8.

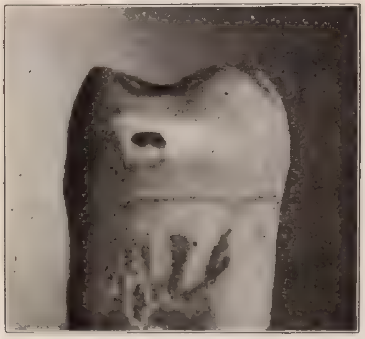

Fig. 9.

Figure 9 shows the general form of the attack upon the proximal surface of a molar.

Figure 10 shows a worn contact which has nearly cut through and area of enamel which was partially disintegrated by caries. In general, then, the areas of liability move gingivally as age increases.

The study of illustrations of areas of liability becomes a powerful argument for the study of the appearances of caries in the mouths of patients. I have heard an old practitioner say that the strangest thing about the dental profession was that they studied caries from books and in the laboratory and over the microscope but as soon as they got to the chair they plugged cavities, either by rule or without. If dentistry is to be practiced for the best good of the patient, each patient becomes a new problem in the study of caries and the judgment acquired from the careful consideration of many cases through years of practice becomes of greater value to the patient than the repair of the injury which has occurred. From the standpoint of the operator this study furnishes the opportunity for the exercise of judgment and reason of the highest quality in addition to the exercise of mechanical skill.

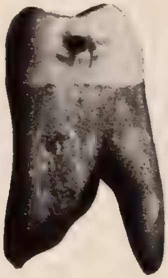

Fig. 10.

The general statement may be made that caries never begins on the axial angle of a tooth and seldom passes along the surface around an axial angle. Very rarely the general condition will be found so favorable to caries that the attack will spread from one surface to another across the angle.

Figure 12 shows a lower molar. (A) The mesial surface showing the white line spreading to the buccal surface. (B) The buccal surface showing the white line spreading to the distal.

(C) The distal surface showing the white line spreading to the lingual.

(D) The lingual showing the white line extending to the mesial. It will be noticed that the area of liability is limited gingivally by the gum tissue and occlusially by the incline of the surface.

The effect of caries upon the tissue is strikingly different, in grooves and pits, as compared with the attack upon smooth surfaces. On the occlusal surfaces the deep grooves furnish ideal protective positions for the growth of acid forming micro-organisms and the acids formed are retained by the plugging of the opening of the grooves by the products of growth and debris. The destruction of

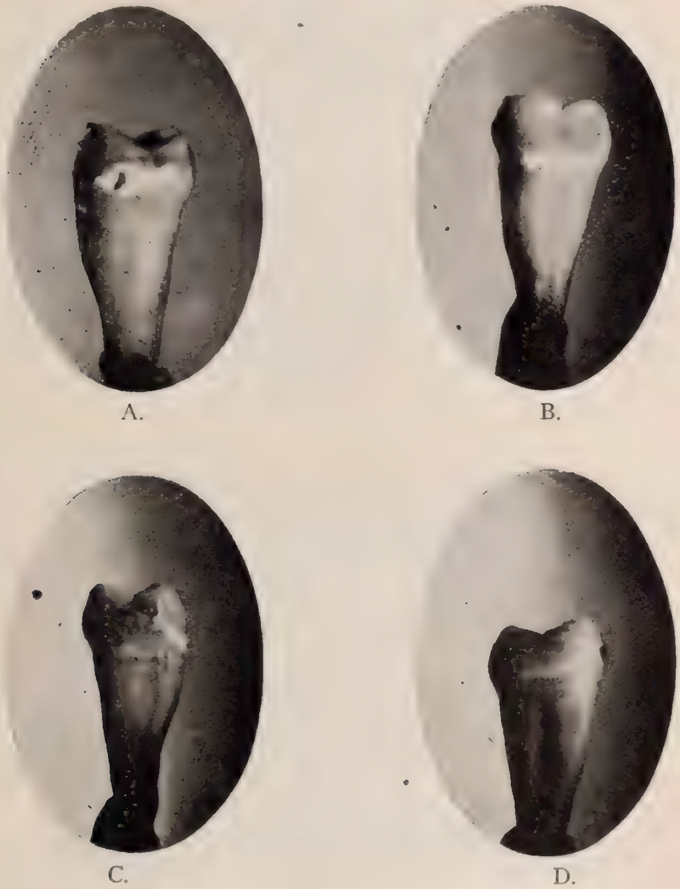
A. B. C. D.

Fig. 12.

tissue, therefore, progresses most rapidly and presents the greatest intensity, often spreading across the direction of the enamel rods, and extending laterally as well as toward the dento-enamel junction. The general form of the tissue affected is that of a cone with the apex

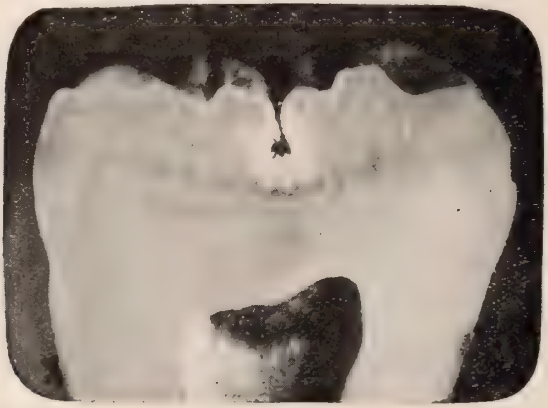

Fig. 13.

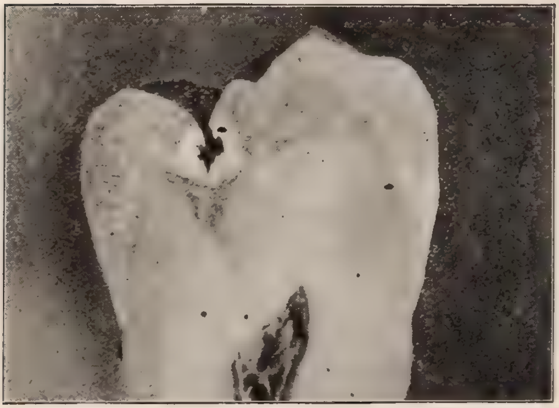

Fig. 14.

at the surface of the groove and the base towards the dento-enamel junction.

Figure 13 shows the form of progress; and Figure 14 the extension across the enamel rod direction. As soon as the enamel junction is reached the destruction progresses most rapidly along that line and may undermine the entire occlusal enamel without increasing the size of the original groove at the surface.

Figure 15 shows this line of progress and emphasizes the importance of treating these cases as soon as the injury reaches the dentin or before.

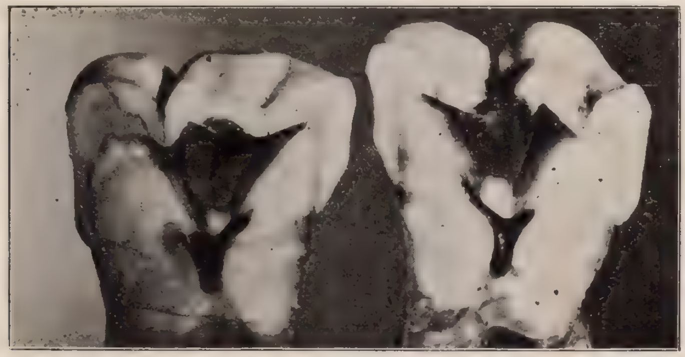

Fig. 15.

In Figure 16 still greater injury to the tooth has resulted from the undermining of the enamel. Attention has before been called to the fact that similar conditions are presented here to those which occur in defects between filling material and cavity walls. The destruction of tissue will progress most rapidly at the bottom of the defect and will spread under the filling and under the enamel without showing upon the surface, until great damage has been done. This becomes the basis for the statement that a leaky filling is worse than none at all.

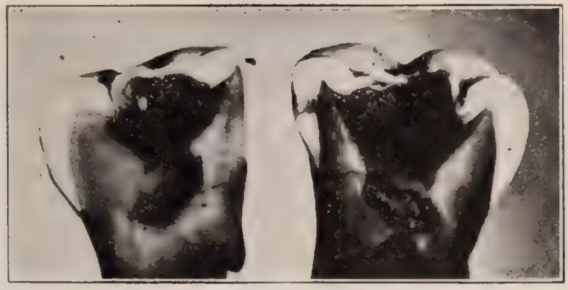

Fig. 16.

The attack upon approximate surfaces presents strikingly different character. It apparently depends upon a colony of micro-organisms being glued down upon the surface of the tooth, in a protected area, which tends to spread over the surface from the point of greatest protection. The acids produced by these micro-organisms and confined in contact with the tissues by the material which glues the colony to the surface attacks first the cementing surface between the enamel rods penetrating in the direction of the rods and very sligthly roughening the surface. If this colony is dislodged it can become more easily re-attacked because of the slight roughness of the surface and if not disturbed it will spread over the surface. The effect of caries, therefore, presents two phases—the penetration of the tissue, and the spread upon the surface.

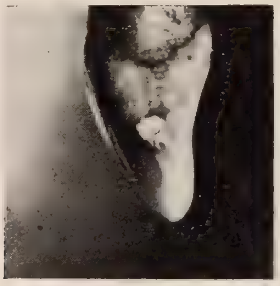

Fig. 17.

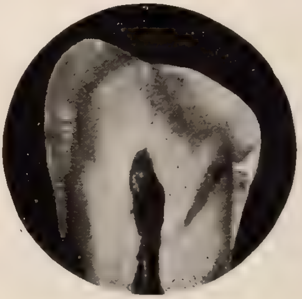

Fig. 18.

Figure 17 shows a white spot just below the contact point on the proximal surface of an incisor.

Figure 18 shows a similar white spot which has been cut through so as to show the penetration of the tissue. In the whitened area the cementing substance has been dissolved from between the enamel rods. At the point of greatest intensity the effect of the acids has reached the dentin and caused reaction in the dentinal tubules, and the attack on the surface spreads from the point of greatest intensity occlusally and gingivally, so that the entire area is in the form of a cone with the base on the surface and the apex towards the dentin.

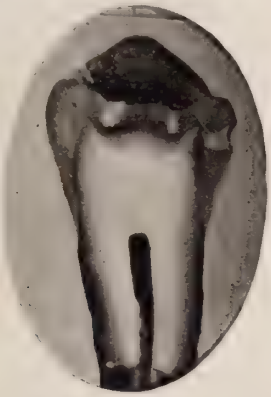

Fig. 19.

If we examine a considerable number of these we will find considerable variety, expressing differences in condition and in the intensity of the process.

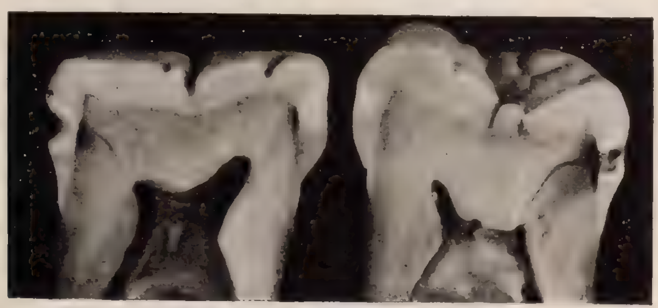

Fig. 20.

Figure 19 shows a spot in the bicuspid which has not reached the dento-enamel junction.

Figure 20—Approximal attack of a molar. On one side some enamel rods have fallen out and the enamel is being undermined

Upon the other the action of the acid is affecting the dentin, but as yet no enamel rods have fallen out.

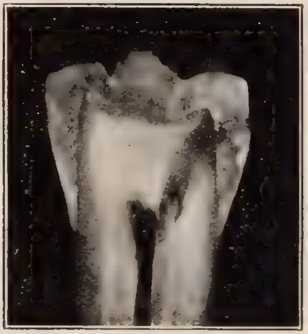

Fig. 21.

Figure 21—In this figure note the extension of the attack gingivally from the point of greatest intensity.

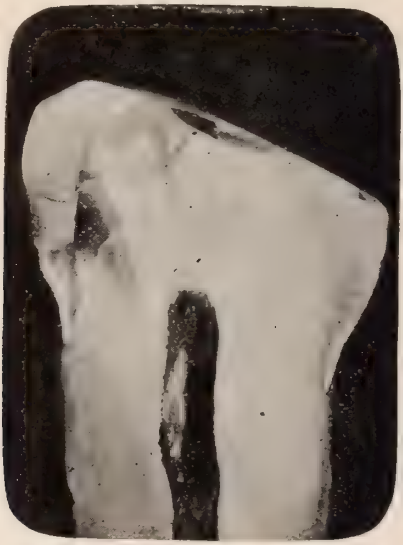

Fig. 22.

In Figure 22 over a very wide area the cementing substance has been destroyed all the way to the dentin, but the rods are still in place. Considerable area of dentin is decalcified.

Figure 23 on one side shows the action on the dentin with the rods still in place; on the other the rods are beginning to fall out, producing an actual cavity and the enamel is being undermined along the dento-enamel junction.

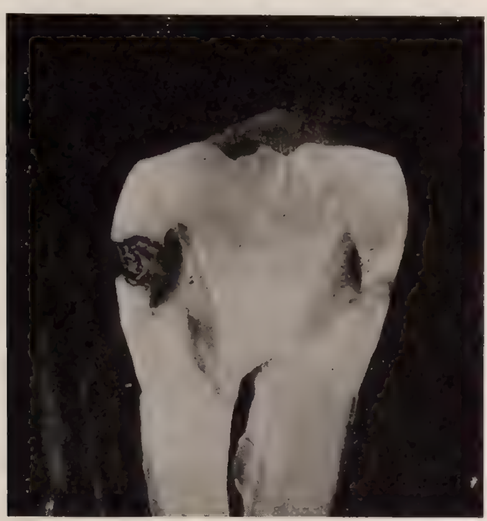

Fig. 23.

Figure 22—A wide area of attack of less intensity.

The degree of tissue injury before a cavity is formed is very much greater than I had any idea of before making these illustrations. The most striking example of that is furnished in the next slides.

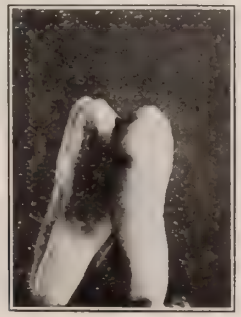

Fig. 24A.

Figure 24A shows the proximal surface of a molar. There was upon this surface a whitened area oval in form, just beneath the contact point. The difference in color, even in a dried condition, was so slight that I failed to show it with the camera, even after repeated trials, but by placing the light so that it would shine through the tooth instead of being reflected from its surface. I was able to get the present picture, in which the disintegrated area can be seen as a shadow, showing the white just on the edge where the light strikes it directly.

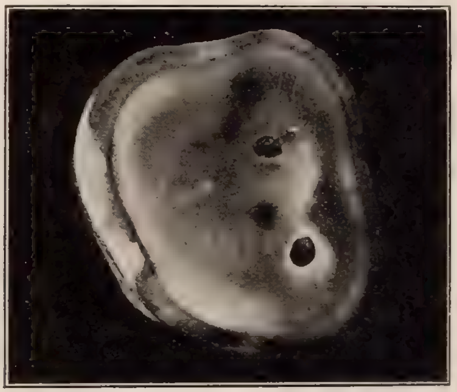

Fig. 24B.

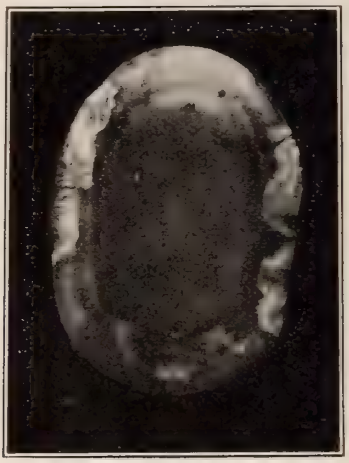

Fig. 25.

A sharp explorer would scarcely recognize a roughening of the surface (Fig. 24B), but when the tooth is cut transversely through this point the degree of injury to the enamel can be seen, showing two points of greater penetration, reaching the dentin at one of them and spreading upon the surface far towards the buccal and lingual.

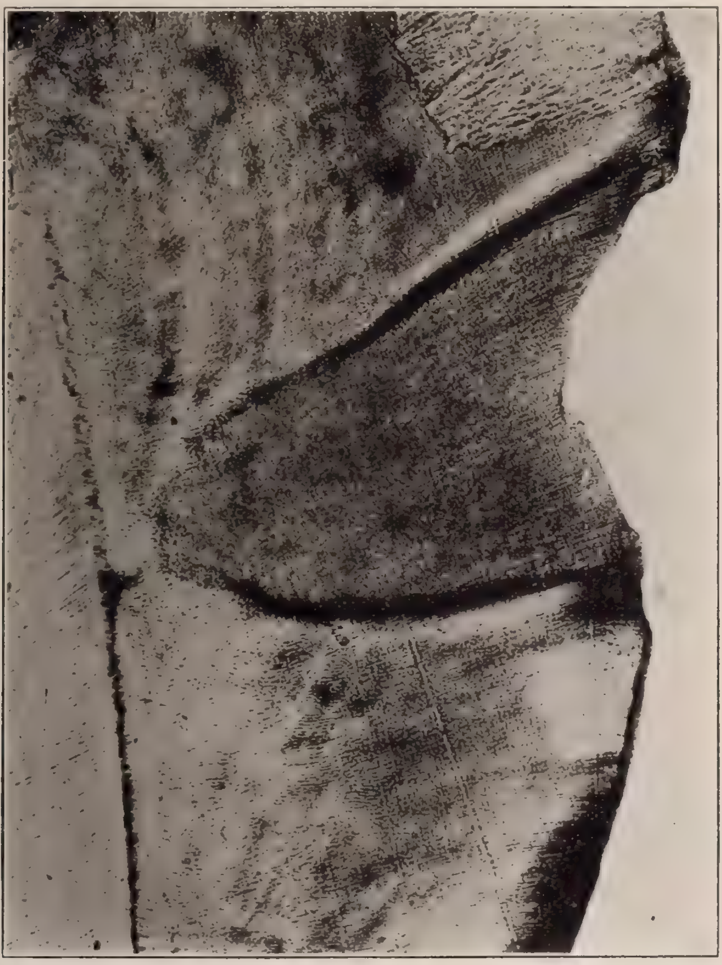

Fig. 26.

Figure 25 shows a transverse cut through a similar spot upon a bicuspid. Notice particularly that there are two points of greater

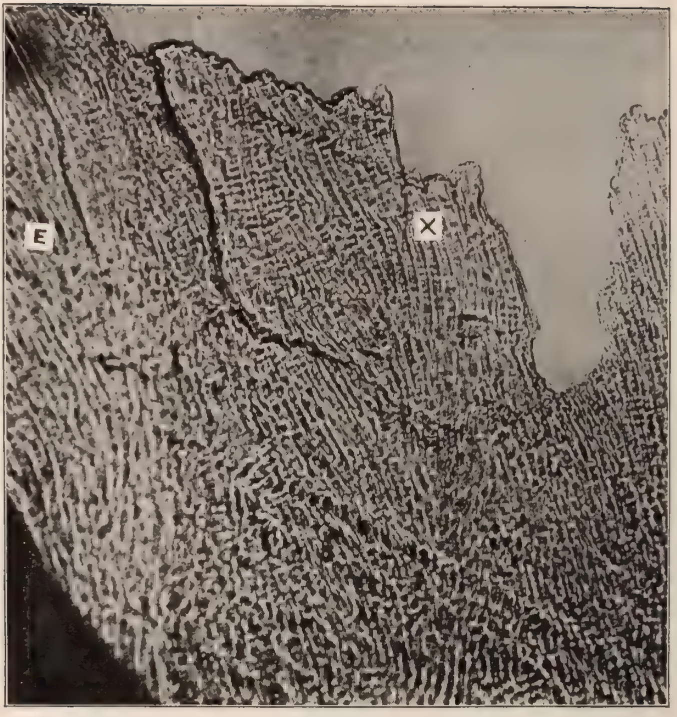

Fig. 27.

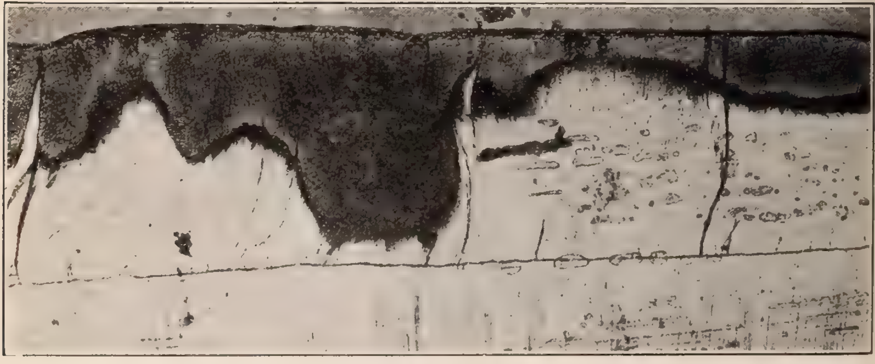

Fig. 28.

penetration and that the surface extension reaches upon one side almost to the axial angle at the buccal, not so far upon the other, but on this side the surface extension is greater toward the lingual. Notice particularly the extent of the surface attack buccal-lingually.

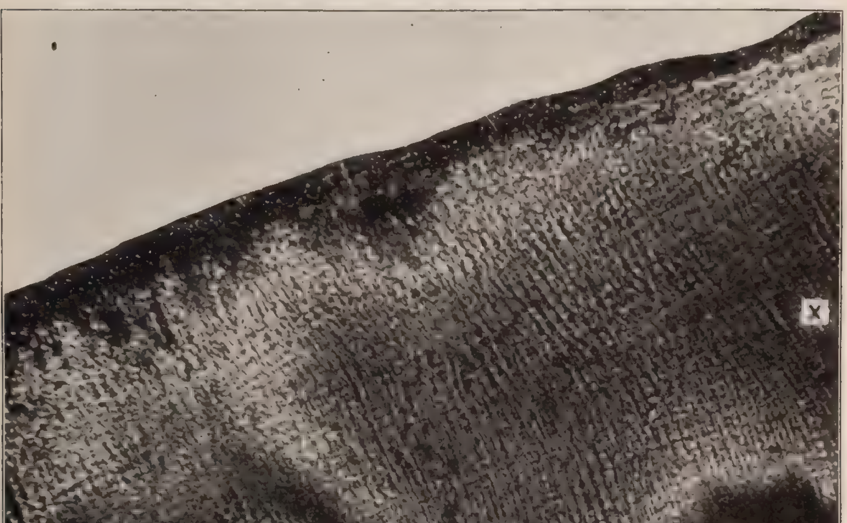

Fig. 29.

Figure 19 shows a small spot at the contact point of a bicuspid. After photographing the surface Dr. Black ground the section and the micro-photograph (Fig. 26) shows the effect upon the tissue.

In a higher magnification (Fig. 27), it can be seen that the enamel rods are entirely separated. By filling these whitened areas

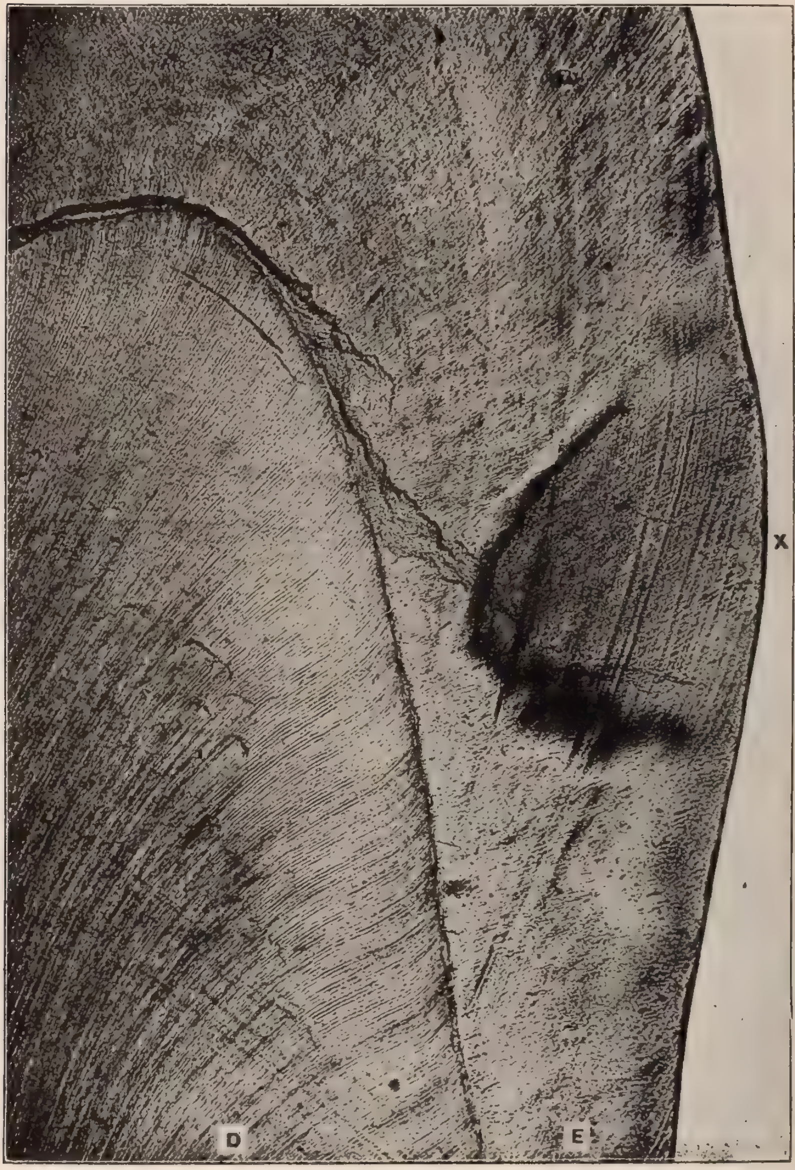

Fig. 30.

with yellow shellac before grinding, the cementing substance which has been destroyed can be replaced with shellac which photographs darker.

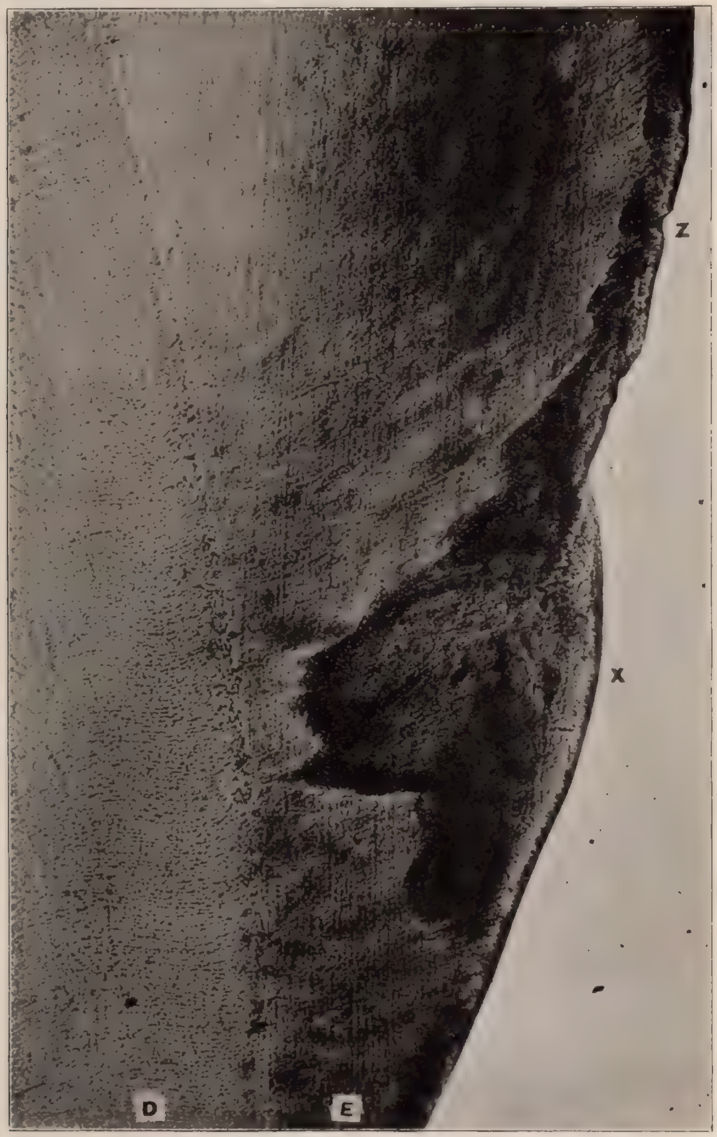

Fig. 31.

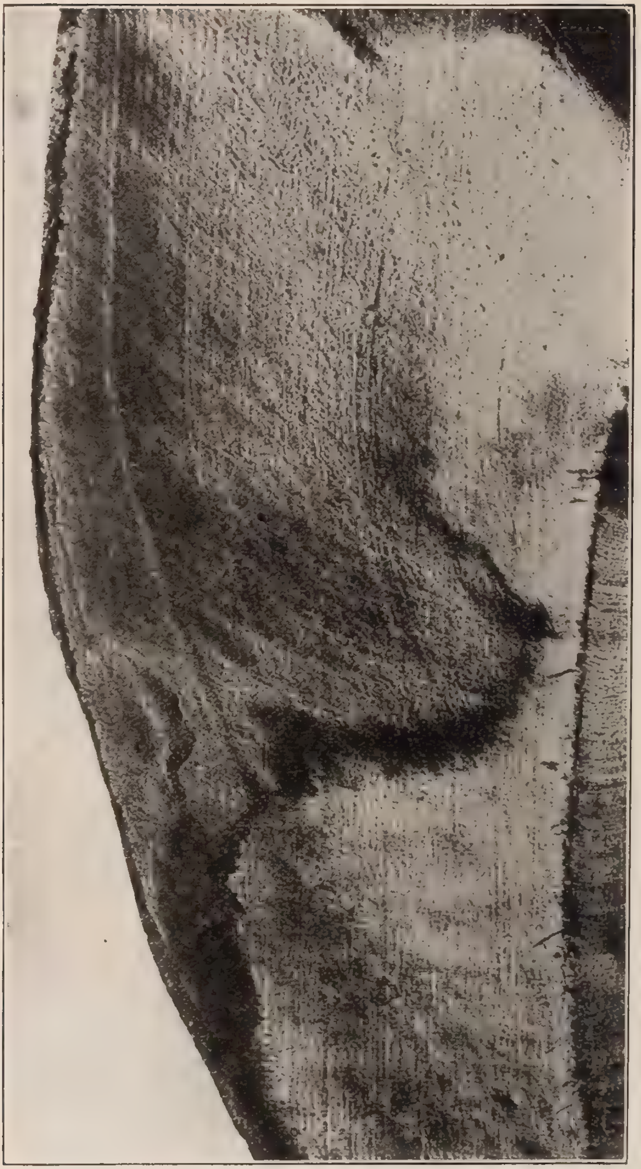

Fig. 32.

Figure 28 shows a low magnification of a spot treated in this way. Notice the difference between the still solid enamel and that from which the cementing substance has been removed.

Figure 29 is a higher magnification from the same area and shows at one point the solid enamel and at another the separated rods held in place by the shellac.

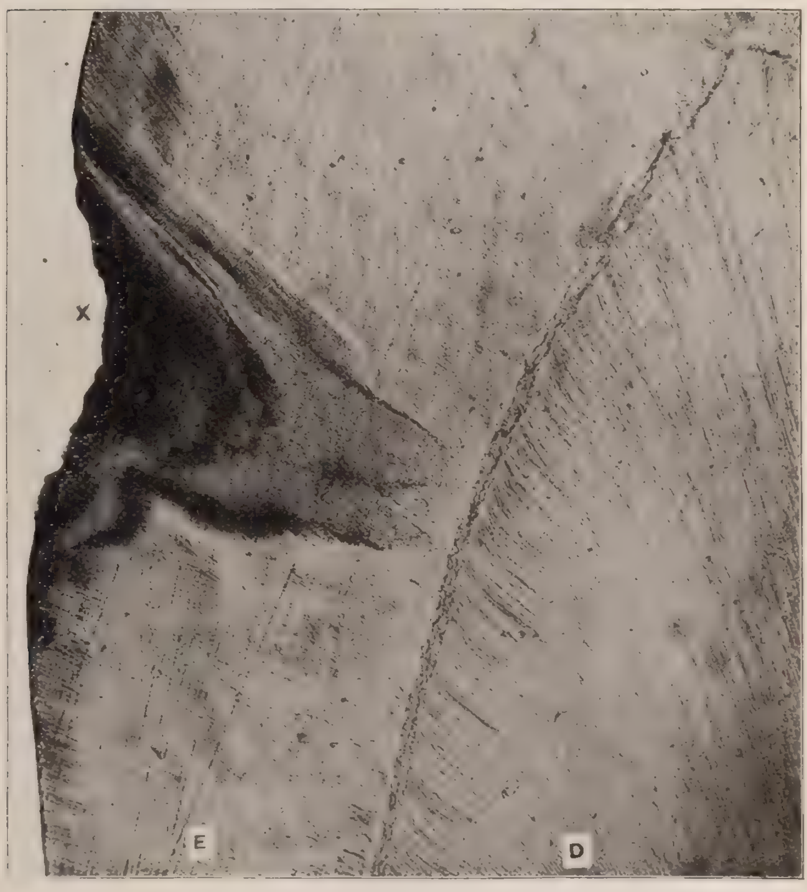

Fig. 33.

We may briefly examine the appearance of a number of sections before the dento-enamel junction is reached by the action of the acids.

Figure 30 is cut through a very small spot. The darker line between the disintegrated and sound tissue which is found both in shellaced and unshellaced specimens is unusually well marked. The flame-like projections toward the dentin are characteristic and will be noted in all of the specimens.

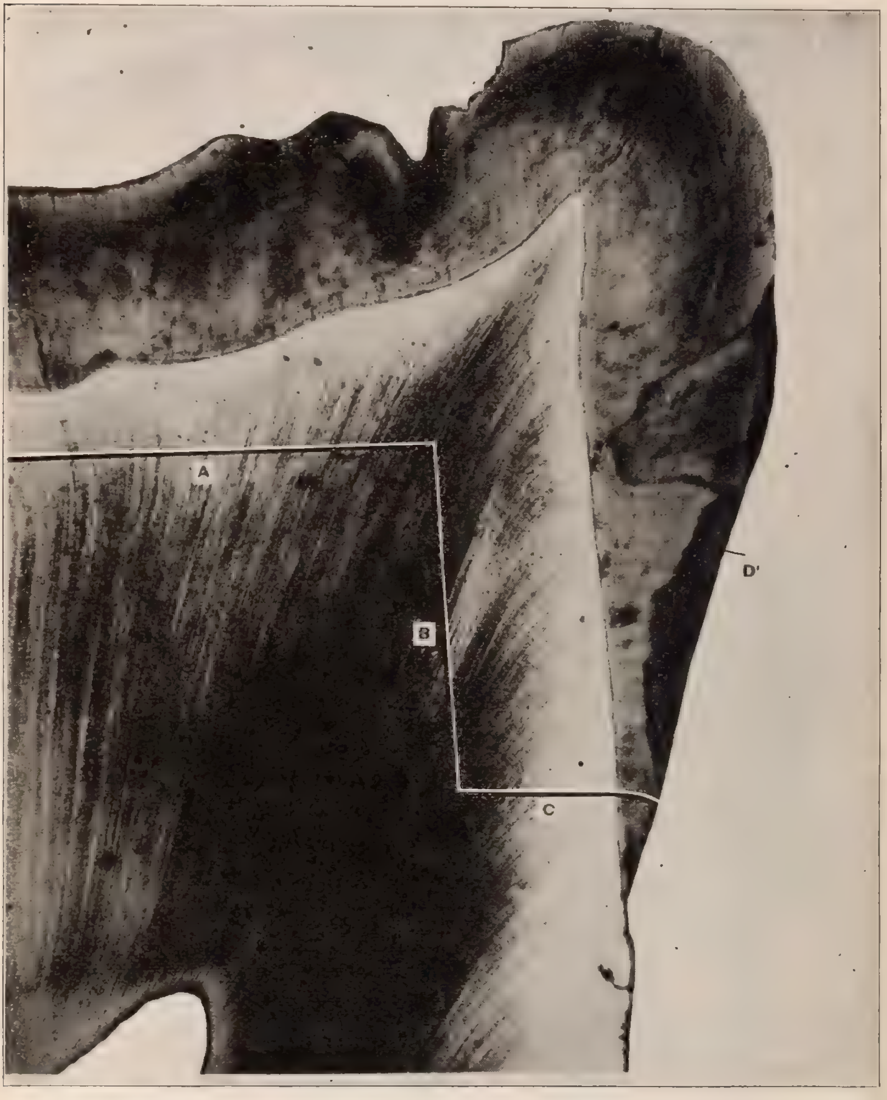

Fig. 34.

Figure 31 is similar but shows a larger area of disintegrated tissue. Again note these darker lines between the sound and carious enamel.

Figure 32 shows extension of the attack along the surface towards the gingival.

Figure 33 shows a small area which apparently has been slow in its progress and shows little surface extension. Notice the flame-like projection towards the dentin.

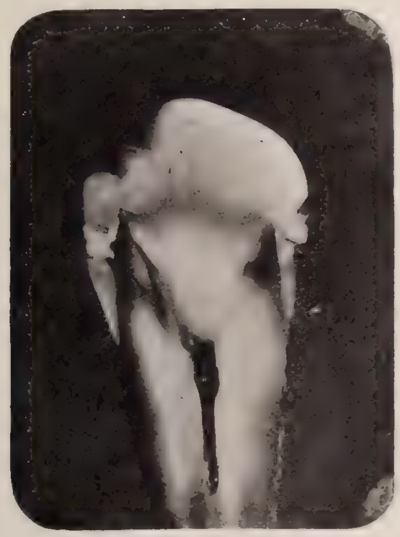

Fig. 35.

Figure 34 shows the extension gingivally along the surface in a remarkable way.

As soon as the solution of the cementing substance reaches the dento-enamel junction the acid formed by the micro-organisms on the surface begins to decalcify the dentin, and this progresses most rapidly at the dento-enamel junction. Decalcified dentin shrinks and leaves an actual space between the dentin and enamel. The destruction now progresses most rapidly at the dento-enamel junction, dissolving the cementing substance from between the rods from within outward. It must be remembered that the rods are entirely separated or partially separated at this stage and that the tissue is as porous as a sieve, alhough the continuity of surface is still unbroken.

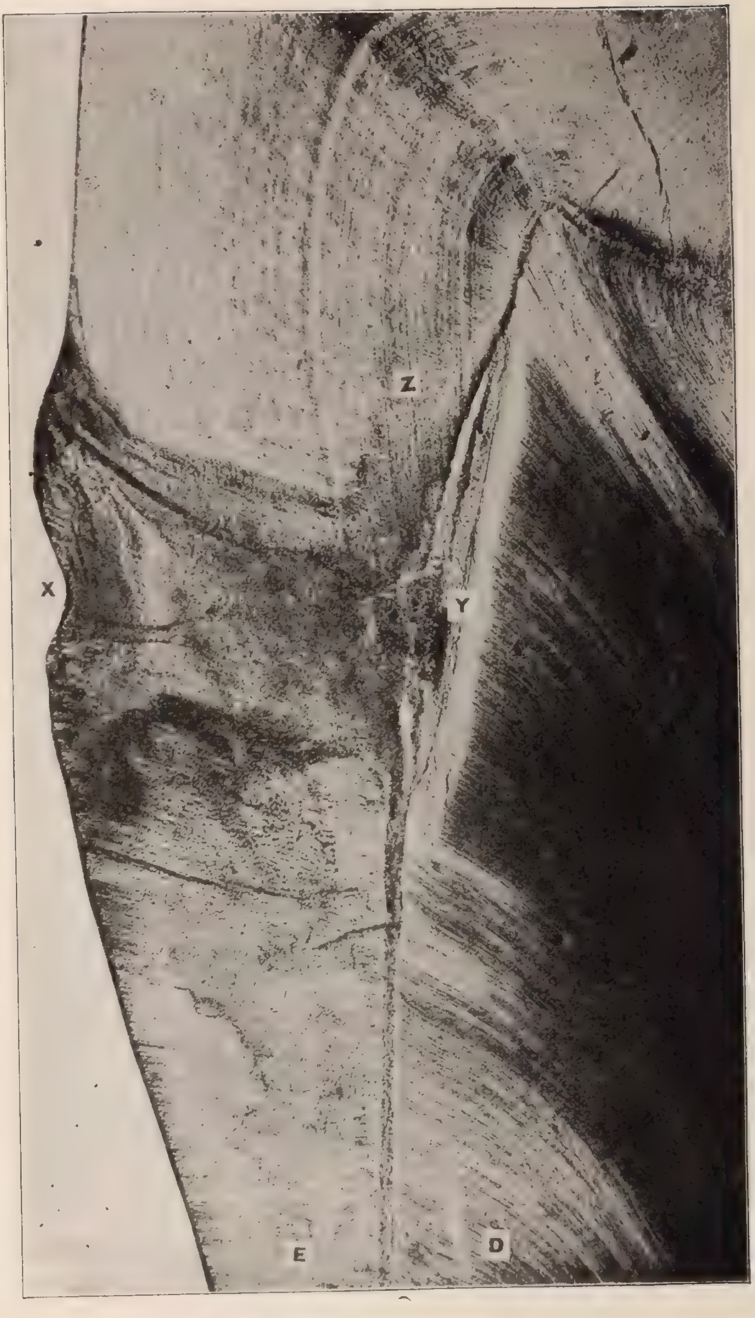

Fig. 36.

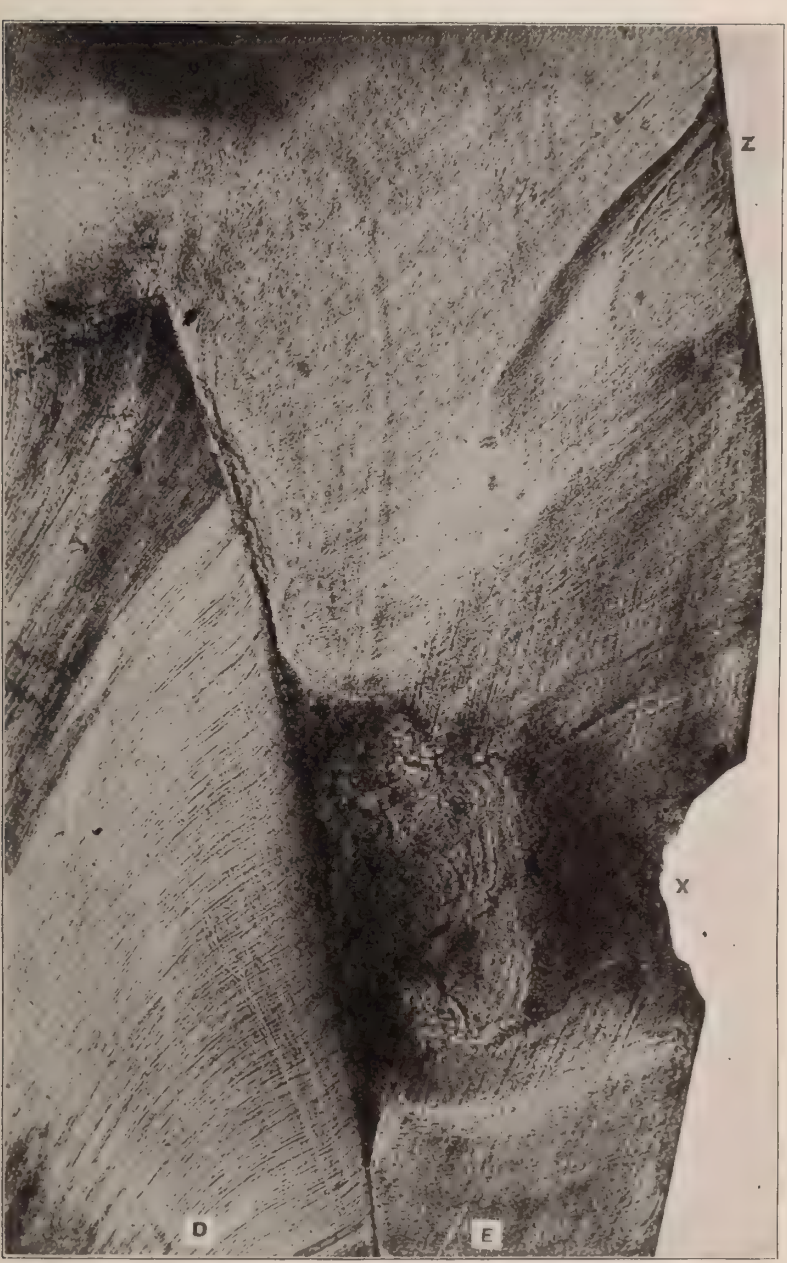

Fig. 37.

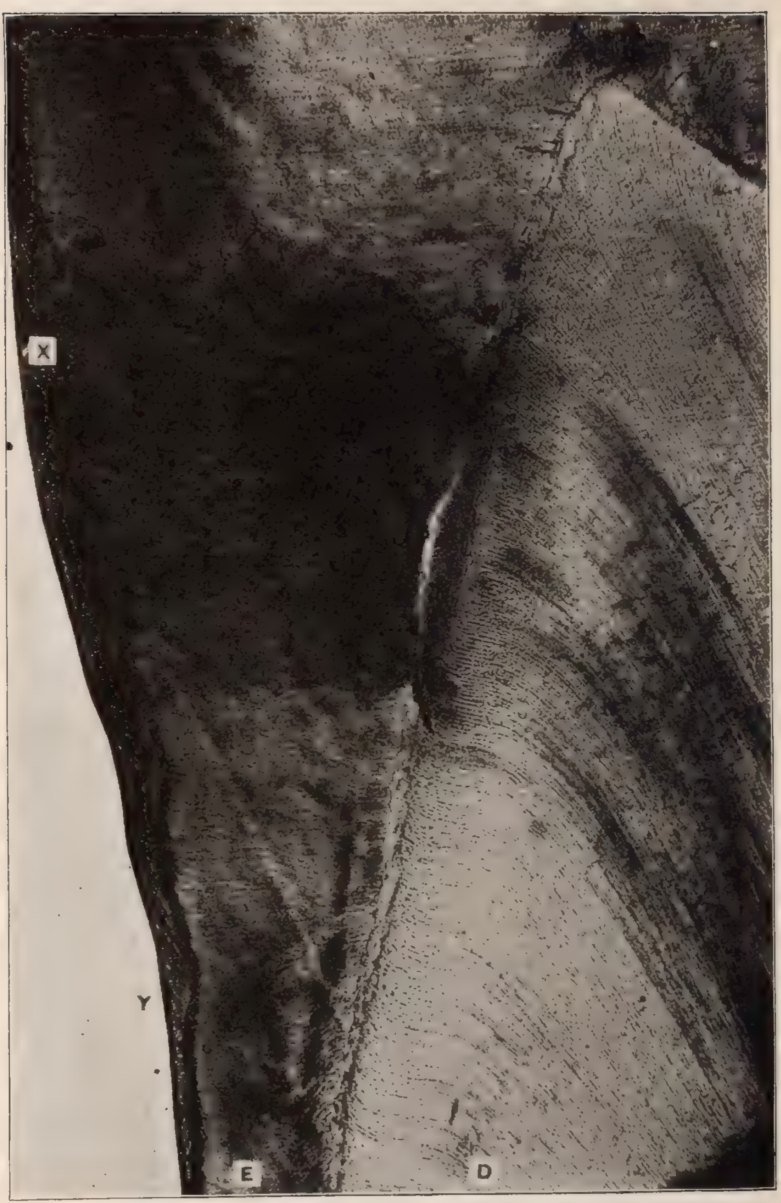

Fig. 38.

Figure 35 shows all of these conditions in a split tooth. The section is then ground and Figure 36 shows the condition of the left half. Figure 37 the right half. In this illustration notice the bulging of the surface of the enamel. It must be remembered that in the disintegrated area the enamel rods are separated from each other, and the gases generated by the decalcification of dentin force them outward, producing an actual bulging or swelling of the surface. It is a suggested thought that this pressure may be a factor in the pain characteristic of caries which has just reached the dento-enamel junction.

Figure 38 shows the same conditions with distinct gingival surface extension. As soon as the enamel begins to break in or rather the rods to fall out, the spreading at the dento-enamel junction may overtake the spreading upon the surface and because the central point of the colony has been lost by the formation of the cavity the surface extension will not continue. If the cavity is prepared, removing simply what tissue is disintegrated and the filling inserted the protective point from which the colony may spread is restored and surface attack may again appear at the margin of the filling. This undoubtedly often happens in the insertion of fillings without proper consideration of the area of surface extension. Very often not all of the surface attack is removed at the time of the original operation. For instance, in Fig. 34 the gingival wall must be extended gingivally until the whitened area, which appears dark in the section, at the cavo-surface angle is removed before you have passed beyond the area of present surface attack. The consideration of these factors is undoubtedly most important in the prevention of recurrent caries at the margin of perfect fillings.

(After the reading of his paper Dr. Noyes showed upon the screen some autochrome pictures of stained tissues on slides for the microscope, and a few landscapes and other pictures to illustrate the new color photography.)

SUPERIORITY OF NATURAL TEETH OVER ARTIFICIAL SUBSTITUTES.*

BY H. W. M'MILLAN, D. D. S., ROSEVILLE, ILL.

Mr. President and Members of the Illinois State Dental Society:

Very many strictly scientific papers have been contributed to dental literature, and doubtless very many more will be written in the future as our profession develops; but does it not seem proper to review some of the knowledge we already possess that the investigations of the years to follow may be directed principally in that branch of dentistry which up to the present has resulted in the greater good to humanity—namely, the operative? I believe prosthetic dentistry has and will continue to have its place and use, but I also believe that it will be largely *supplanted* and overtopped by the growth of the idea of prophylaxis as the profession and the laity become better informed concerning the relative service rendered by these two departments of dentistry. I believe the dentist of today and also tomorrow and of the æons to come, should be an enthusiastic idealist who is able to radiate the truth in the highest conceptions, that his influence for good may be felt by others of his profession, and by the people he serves. He who does less is a shirk, a drone in the beehive of industry, a barnacle on the ship of progress. A stock phrase of his is: "I can't," and that of a crowd of his kind is: "It can't be done."

This paper will be a collection of facts and deductions, gleaned from the fields of thought traversed by others, and no claim of originality is made, save perhaps in the manner in which it is presented.

I am a firm believer in, and advocate of, coöperative prophylaxis, and skillful diagnosis, to the end that the natural teeth may be erupted in correct alignment and occlusion, that decay in them may be prevented, or discovered and remedied at its inception, and that pyorrhea may be prevented from attacking the structures which support their roots.

I believe in a thorough study of the first causes of abnormal conditions, that they may be removed and the consequent evils prevented, that the individual may develop with that harmony and symmetry which the Divine Creator intended.

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*Read before the Illinois State Dental Society, May, 1908.

Long before there is a demand for prosthetic dentistry, the need for operative dentistry exists; and long before there is a demand for operative dentistry, there is a need for prophylaxis and diagnosis.

Among the people of the United States there are but 14 per cent who *employ* dental services intelligently, or, in other words, make the demand at the time of the need.

Every effect has its cause, and it might be discovered upon investigation that among the dentists of the United States there are but 14 per cent who *perform* dental services intelligently, which includes instruction to the public, demanding that they coöperate with the profession, that the right thing may be done at the right time.

Let us now consider some of the common causes of loss of function of the natural teeth, that they may be prevented and the prosthodontist *supplanted.*

First, irregularities, which in themselves favor tooth loss by bacterial invasion proximally and gingivally, caused by the increased difficulty of cleansing, may be prevented years in advance of the condition which follows neglect. One of the frequent causes of irregularity is premature extraction of deciduous teeth, and neglected filling of the same, as they are frequently and wrongly extracted to relieve pain caused from pulpitis or abscess, the result of neglected prophylactic treatment and filling. Deciduous teeth were intended by nature to be shed at the proper time, and extraction is rarely justifiable, especially the extraction of the deciduous molars. Such teeth require treatment and filling if the child has not reached the proper age for their natural loss through the shedding process. The second deciduous molars lost by extraction at the sixth year is a certain invitation to irregularity and deformity in the permanent teeth, caused by a forward movement of the first permanent molars from which the other teeth take their positions, causing one of two deformed conditions—either irregularity or protrusion. If children's teeth are given proper care they will retain vital pulps and be shed naturally. Irregularities caused by delayed extraction occur principally in those whose pulps have not been kept vital, and extraction of these at the proper time is justifiable. The extraction of the first permanent molar, in which decay commonly exists very early after eruption and which is frequently mistaken by the parents for a deciduous tooth, is often a cause of irregularity. Other less common causes of irregularities might be mentioned, but that would make this paper too long. Whatever the irregularity, it could have been prevented and by proper treatment by the orthodontist can be cured if taken in the period while bone formation is still active. If later than this, much improvement in appearance can be secured by the artistic and judicious use of carborundum stones, shaping the outlines of the cutting edges of the anterior teeth into more uniform and harmonious lengths and positions.

Some may ask what has all this to do with the superiority of natural over artificial teeth? It has this: that irregularities of the natural teeth may be either prevented or corrected wholly or in part at any age, and irregularity of itself is no justification of the extraction of natural teeth that artificial may be inserted.

A second common cause of loss of function of the natural teeth which may be prevented or remedied by operative dentistry and the prosthodontist supplanted, is caries. We owe much to the original scientific investigations of such men as the late Dr. W. D. Miller of Berlin, who discovered the true cause of caries. We are debtor to the genius of Dr. G. V. Black of Chicago for the well-known cavity preparation embodying the principle of extension for prevention, and we are debtor to Dr. W. H. Taggart for the existence of the cast inlays.

That decay is preventable is not now an open question. Clean teeth do not decay. True, faulty development and faulty alignment will call for extra care, but the fact remains if a nidus is not permitted to form a cavity will not follow, as the former is invariably the forerunner of the latter.

I believe any individual's natural teeth may be saved from childhood to extreme old age, if the proper care is given them at the proper time. The examinations should be made at intervals sufficiently frequent to prevent any cavity which might form from extending beyond the first stages. By neglect, every degree of decay is passed through, until an inlay involving the entire crown may be required, and treatments and root fillings be necessary under it; yet the value of a natural tooth, and its superiority over the artificial is so great, that the end justifies the means, as will be shown later on in this paper. Patients will in their ignorance ask for the extraction of such a root, but should be informed, if it be a molar, that they are losing 15 per cent of their masticating area upon that side, and that it is wrong practice to remove saveable roots, and by saving such a root with an inlay the necessity of a bridge is avoided. The case cited is of course an extreme one, but if the root be firm it is a case for an inlay worker and not for extraction.

Therefore decay in itself, so long as only the crown is involved and the root remains firm, is no justification for extraction of the natural and the insertion of the artificial. Such a tooth, though inferior to a perfectly sound natural tooth, is yet far superior to an artificial tooth on a plate.

A third common cause of loss of function of the natural teeth, which may be prevented or cured by operative dentistry and the prosthodontist supplanted, is pyorrhea. Dr. D. D. Smith of Philadelphia cures pyorrhea and every dentist can cure it as Dr. Smith cures it if he does as Dr. Smith does. He extracts the teeth which are hopelessly incurable and cures the others by thorough removal of irritants aided by local medication. To supply the missing teeth lost by neglected and incurable pyorrhea and by neglected and incurable roots in which caries has progressed to such a depth that they cannot be saved, is the legitimate field for the prosthodontist, a field which will grow less and less as the masses become educated to a proper conception of the value of their natural teeth.

It is a deplorable fact that all prosthodontists do not confine themselves to this legitimate field but extract teeth that could and should be saved.

Pyorrhea can be cured and it of itself is not necessarily a justification for the extraction of natural teeth and the insertion of the artificial.

As irregularity, decay, and pyorrhea of themselves are no justification for the extraction of natural teeth, and we see the broad field of opportunity which opens up to the master of prophylaxis, and of diagnosis, and of operative procedure, with the birth of every generation, and we see the very narrow legitimate field of the maker of artificial teeth, which decreases as the masses become educated, let us next consider some scientific tests which have been made, and are a matter of record but not a matter of common knowledge, at least by the laity, and I dare say by a great many who are now practising dentistry, especially prosthetic dentistry.

Truth should be the object of our most vigilant search in dentistry, and this is best obtained by scientific tests, with scientific instruments, and a study of the records of such experiments.

Two of these instruments which have been used in dentistry are the gnathodynamometer and the phagodynamometer, the former being used to ascertain the amount of pressure *obtainable* on forcible closure of the jaws, and the latter determines the amount of force *exerted* upon the teeth in crushing various articles of food.

The gnathodynamometer, as an analysis of the name indicates, is a measure of the gnawing power. The first instruments for this purpose were invented in 1893 and exhibited at the World's Columbian Dental Congress by Dr. George J. Dennis of Chicago. Though at first crude and inaccurate, similar instruments have been constructed, and one has been perfected by Dr. G. V. Black, to whom in so many ways we are greatly indebted. This instrument will be exhibited in the clinic and, although old to quite a number, I feel sure a demonstration of its use will be new to very many.

The first demonstration I ever saw with a gnathodynamometer was at the fourth International Dental Congress, at which Dr. Eugene R. Warner of Denver, Colo., made some tests of which I have no record. In 1905 at the meeting of the First District Dental Society of Illinois I secured Dr. Warner's instrument and made sixteen tests upon natural teeth which averaged 155 pounds pressure. The test is made upon the first molar teeth, as upon trial it is found that the maximum of stress can be exerted upon these. A number of those tested had lost the first permanent molar and the resultant test is therefore lower than it should have been. The limit of the instrument was 300 pounds, yet Dr. W. T. Rutledge of Monroe City, Mo., raised the index to the extreme limit and held it there. He has the full complement of teeth in normal occlusion. I tested two with the instrument, both of whom wore plates both upper and lower, and neither could raise the index above fifteen pounds after repeated efforts.

There are at least two causes for this. The primary cause is the pain produced in compressing the gums between the plate and the bone. One who has worn plates has consequently learned to chew lightly, thus bringing on through disuse the secondary cause—

an atrophy of the muscles of mastication. The first cause given—that of pain produced—is, however, the limiting condition, as is also the limiting condition of those tests made upon the natural teeth. Each one being tested stops from pain rather than from lack of power.

Dr. G. V. Black in the *Cosmos* of June, 1895, goes into this subject in a highly interesting, scientific and practical way. Quoting from his paper, he says: "On full plates, upper and lower, the stress exerted has been from twenty to thirty pounds. On upper plates with natural teeth below forty pounds has been exerted in a few cases.

"These trials show artificial teeth to be sadly deficient in masticating power as compared with the natural organs. Perhaps it is well that so many persons fail to realize what they have lost, and as the recovery of it is not within the range of possibility, perhaps the less said about it the better. But a study of the records of the gnathodynamometer and the records of the phagodynamometer shows only too plainly what it is."

Having indicated the great loss of power sustained by those who have had natural teeth extracted and artificial teeth inserted, let us next consider whether there is sufficient power exerted upon artificial teeth to properly masticate ordinary foods. To demonstrate this it became necessary to invent an instrument which would register the number of pounds necessary to crush the various articles of diet. This instrument—the phagodynamometer—is the invention of Dr. G. V. Black, and was first demonstrated in 1895. It consists of two opposing occlusal surfaces, simulating the upper and lower first permanent molars in mastication. Between the two occluding surfaces is placed the food to be crushed, and pressure is brought to bear upon the upper cusps by means of a lever. The lower cusps transmit the pressure through a slide upon a scale beneath, thus weighing the amount of force necessary to crush the food. Again quoting from Dr. Black's paper:

"PHAGODYNAMOMETER RECORDS.

"Crushing point of meats:

1.	Boiled corn beef, nice and tender	30-35 lbs.
2.	Beefsteak, medium well done, chuck	40-60 lbs.
3.	Beefsteak, well done, chuck	45-60 lbs.

4.	Beefsteak, rare done, very tender, loin	35-40 lbs.
5.	Beefsteak, round	40-50 lbs.
6.	Beefsteak, well done and rather tough	60-80 lbs.
7.	Mutton chops	30-40 lbs.
8.	Mutton steak	35-45 lbs.
9.	Roast veal, tender and nice	35-40 lbs.
10.	Roast loin of veal	30-35 lbs.
11.	Roast beef	45-60 lbs.
12.	Roast beef loin	35-50 lbs.
13.	Pork chops—loin	20-25 lbs.
14.	Roast pork	30-35 lbs.
15.	Broiled ham, tender and nice	40-60 lbs.
16.	Cold boiled tongue, central part	3-5 lbs.
	Near root of tongue	15-20 lbs.
17.	Cut from shank of an old animal—	
	Fried, rare done	60-80 lbs.
	Fried, well done	70-90 lbs.
18.	Cut from the neck	70-90 lbs.
	Cut cabbage (cold slaw), crushed at	40-50 lbs.
	Lettuce	25-30 lbs.
	Young radishes	20-25 lbs.
	Lemon tablets	60-70 lbs.
	Crystals of rock candy crushed at	30-45 lbs.
	Hard candy marbles, ¾-in. diameter	70-100 lbs.
	Ordinary hard stick candy, old	90-110 lbs.
	Ordinary hard stick candy, fresh	45-70 lbs.
	Lemon drops	60-75 lbs.
	Small cinnamon drops	30-50 lbs.

"Small stick licorice was crushed only enough to show plainly the indentations of the teeth at two hundred and fifty pounds."

The phagodynamometer demonstrates the pressure *necessary* in mastication and the gnathodynamometer demonstrates the pressure *available* in mastication. Taken together they prove that the natural teeth can crush with ease that which artificial teeth fail to crush with the greatest effort.

These are tests of which we have all heard too little and of which the general public know practically nothing, and it is our duty to instruct them. I agree with Dr. Black that any amount of instruction along these lines will not call again into being powers which the many patients have already lost in the extraction of their natural teeth, and perhaps the less said about it to them the better. I believe, however, that he will agree with me that to those who have not already lost their natural teeth a great deal said upon these subjects would be better than silence.

It is this phase of the subject which induced me to write this paper. I believe it is our dental duty to familiarize ourselves with these tests which furnish us with argument and instruction which we may use daily at the chair, and prevent many from taking that step (the extraction of the natural teeth) from which there can be no reconsideration—and I believe more good can be accomplished by the earnest statement of facts by the dentist than by resorting to printed matter.

Considering the results of these tests, I believe it is our duty to give greater attention to the development of the operative branch of our profession and less to the prosthetic. We should give increased attention to prophylaxis preventing the destruction and loss of the natural teeth, as they are best for service, and less attention to artificial teeth, for they give the least of service.

This is the tendency of our profession today, and it is an indication of the progress operative and prophylactic dentistry has made, and in which there is yet so much room for improvement. When we consider that there is only about 14 per cent of the population of the United States who make an intelligent use of dentistry we find the large majority ignorant of that which is for their own best interests.

I have written to twenty-five dentists who have been engaged in the practice of dentistry for a period of over twenty-five years asking them the following question: "How does the number of teeth extracted at the present time compare with that of twenty-five years ago?" The question was answered in various ways, ranging from 50 per cent down to less than 1 per cent, averaging perhaps 10 per cent, or, in other words, one tooth is extracted now where ten were extracted twenty-five years ago. These questions were all asked of high-class men, some of whom do no extracting and have established operative practices, and it is among this class of practitioners that the extractions have grown so rare. They are men of high ideal who do for their patients those operations which they would wish done for themselves if they were in their patients' place. They are men of attainments, of science, of ethics, and if all dentists were of their stamp of nobility there would be more faith and less failures in dentistry. There would be a better, a stronger and a happier generation to follow, because their dentistry would be performed in harmony with the dictates of science and common sense.

The natural teeth are superior from a pressure standpoint, and this I believe to be the most important one, as upon this depends the service. However, there are also several minor points worth mentioning, among which is the attachment. Those who wear artificial teeth are limited in the amount of lateral motion employed and are confined principally to vertical movements. If the cusps are left prominent they interlock and much lateral pressure will cause a displacement upon the gums of either one or both plates, this being most liable to occur with the lowers, especially if the alveolar ridge is flat or obliterated. This tilting or dislodgment permits small irritants such as berry seeds to get under the plates, causing much discomfort. This lack of rigid attachment produces some degree of lost motion. This is best illustrated by two mill stones moving in the same direction at the same speed, limiting the grinding power. This occurs in greater degree where full upper and lower plates are worn. If the cusps are ground flat to prevent to some extent this displacement, the utility of them for mastication is impaired, for it is found that it requires much stronger pressure to crush substances between flat surfaces than between those which are irregular, such as the occlusal surface of the natural teeth. While the artificial teeth are thus limited in lateral motion and only surface adaptation, and the natural being firmly implanted in bony tissue to the depth of about half an inch there is a consequent freedom of lateral motion, and the posterior natural teeth are very appropriately termed molars, for they also grind in addition to their adaptation to crush.

Another superiority of attachment of the natural teeth is observed in the mastication of sticky materials such as taffy, caramels, etc., which lift plates from their position; thus not only is the motion limited, but the choice of some of the good things of life.

Some systems require a wide range of food to repair and rebuild the various structures of the body, thus keeping them in health, it is readily seen that the preservation of the natural teeth will permit the mastication of a much wider range of diet than that which is limited by the inefficiency of artificial teeth. This wider selection of foods gives a greater variety and by supplying the elements needed increases the longevity of the individual. It is true that some apparently live as well without any teeth of any kind, but this is putting an extra burden upon the stomach and intestines which they sometimes carry without apparent loss, but under which they often fail, resulting in degeneration, debility and disease.

Another freedom which natural teeth permit which is denied those who wear artificial teeth is that of the facial muscles in the region of the mouth. Many full plates are held in position by the tension of the lips compressed and drawn. This results in a constrained, half-paralyzed expression to the face which is distressing to see. Expression of the emotions, especially of laughter, is usually constrained. Laughing eyes and a half-mournful mouth are incompatible and incongruous. With the extraction of the teeth and attendant absorption of the alveolar process and atrophy of the muscles of mastication, there is a shrinkage of the cheeks no plumpers can perfectly supply.

Another advantage natural teeth have over artificial is in the appearance of the teeth themselves. There are many cases where it is impossible to get an ideal result with plate work on account of the prominence, distortion and irregularity of the alveolar ridge. No pink gum has ever been invented which perfectly imitates the natural, and the same may be said of the teeth themselves.

Another fault of plate work is the disparity of the shrinkage of the process between the upper and the lower jaws, the process shrinking principally from the outside inward with the upper, and from the inside outward with the lower. This accounts for the narrow, small upper plate and the broad, large lower plate required for those who have reached advanced years and who have had the natural teeth removed at an early age. This condition is frequently met and is finely illustrated in "Cryer's Internal Anatomy of the Human Face."

In this condition to restore the normal length of the face requires very thick plates in the alveolar portions resulting in increased leverage and consequently decreased service. When no teeth are inserted it results in a great disfigurement, the chin being thrown prominently forward and close to the nose with a falling in and wrinkling of the skin around the mouth.

With the rapidly developing science of orthodontia, with the increasing light we are constantly receiving upon the treatment of pyorrhea, with the benefits derived from prophylaxis, with the perfecting of operative procedures, there is less and less justification of tooth extraction, and the time is surely coming when the people will in increasing numbers demand the highest skill for the saving of their natural teeth. The men of high ideals in our profession are not appreciated at the present time by the general public as they should be, but as no effort for right is ever entirely lost, there will be a compensation for a life spent in harmony with right principles.

PROCEEDINGS OF SOCIETIES.

THE ILLINOIS STATE DENTAL SOCIETY, FORTY-FOURTH ANNUAL MEETING, SPRINGFIELD, MAY 12-15, 1908.

DISCUSSION ON THE PAPER OF DR. LOGAN.

Dr. C. E. Bentley, of Chicago:

Mr. President.—I think the society is to be congratulated upon the fact that we have a young man identified with this organization who is capable of giving us an intelligent exposé of the pathology and the etiology of this virulent and malignant disease, a disease with which you and I come in contact more often than we are really aware of. From the suggestions of caution he has made with reference to the differential diagnoses between it and other inflammatory conditions of the mucous membrane, he certainly has given us a working theory that ought to stimulate us to further acquirement of knowledge along this line. I am not going to attempt at this time anything like a critical examination of some of the statements made in the paper. I think it is most appropriate for me to say something regarding the treatment of those affections that come under our notice, even if the paper did not make mention of them. But before I attempt anything with regard to the treatment of these mucous patches and these pathological conditions, I want to take issue with some of the positive statements made by the essayist with reference to the pathology of this disease. As I understood the essayist—and I may be wrong—he said that the profession at present is not aware of any specific organism that is the cause of this disease, or whatever the virus may be, it has not been demonstrated to the entire satisfaction of the medical and dental professions. I want to say, that the doctor in my opinion is in error with reference to that, for the reason that the spirocheta pallida, a vegetable organism, has been positively isolated by Schaudinn and Hoffman in 1905. They have cultivated it upon culture plants and Clebs has made absolute demonstrations with it with a view to securing a serum for vaccinating monkeys, thus securing a serum which would procure immunity for the human species. If you will visit the Rush Medical College clinic given by Dr. Belfield, you will see there young Dr. Gradle every day staining these organisms with the smear stain and making positive diagnoses with reference to cases of questionable syphilis for Dr. Belfield and his assistants, so then, I think I am safe in assuming that the spirocheta pallida has been positively isolated. It has been experimented upon in the lower forms of animals, such as monkeys, and particularly the chimpanzee, which has been inoculated with this particular organism, and syphilis in its first and second stages has been produced, and it in turn has communicated the syphilis to similar animals, namely, the chimpanzee. The chimpanzee is the most susceptible of the lower forms of animals to this disease. The monkey only acquires it to a slight degree. No man has as yet been successful in inoculating monkeys with this particular virus. I might also say that in 1903 Metchnikoff and Roux made extensive experiments with this organism, so that their publications regarding it are classics. They undertook these experiments with the idea of securing a serum which would provide immunity, and those who have not read the results of their investigations ought to do so, because I am sure they would prove interesting to you.

I want to say one thing that interests us particularly with reference to our dealing with this disease. If I understood Dr. Logan rightly, he said that the saliva coming from the salivary glands was not contaminated.

Dr. Logan:

I think I said that as it forms in the epithelial cell in the gland it is not often contaminated with the virus, if it remained there. I did not enter into a discussion about it.

Dr. Bentley:

The practical point I wish to emphasize is this: This is a constitutional disease, as has been amply exemplified by the paper, and it is reasonable to suppose that in all of the secretions the spirocheta pallida are to be found in all parts of the body, and it is safe to assume, if this be a constitutional disease, the spirocheta pallida will also be found in the saliva coming from the gland. Therefore, it is unsafe for us to deal with unprotected fingers even with saliva as it comes from the salivary glands. The most infectious period of syphilis, as the essayist has said, is about the sixth or eighth week in the secondary stage, when the mucous patches begin to manifest themselves, and the mere contact of the saliva with these mucous patches is of itself, other things being equal, sufficient to inoculate the dentist, or if his instrument is not sterilized sufficiently to inoculate an innocent patient. Therefore, the point that must be driven home with us is that we cannot be too careful with these suspicious cases for our own protection and for the protection of innocent patients.

I differ with the essayist with reference to the pain caused by mucous patches. As I understood him, he said the mucous patch was not very painful. I have had three very interesting cases that were referred to me within the last year, and the most virulent case of mucous patches and the most virulent case of syphilis that I have ever seen has been under my care within the last month, and the physician, a syphilographer of the city of Chicago, who referred the case to me, said that in all individuals over forty years of age, syphilis is more virulent than with a young person, and the virulency of these mucous patches in this case was beyond anything I have ever had any experience with. There were mucous patches in all parts of the throat and in all parts of the palate, and particularly on the tongue. There must have been ten mucous patches all over the man's mouth, and he suffered untold agonies. He was unable to take anything but liquid food for a long time. My province was simply, first of all, to remove all the salivary and serumal calculi I could possibly dislodge in this affected mouth, and then to treat this man for the relief of pain, and as far as possible sterilize his mouth. To relieve this pain I used a ten per cent solution of argyrol in a spray, the atomizer having been placed in warm water, so that even the contact of cold would not give pain. I gently sprayed this solution of argyrol upon the mucous patches which afforded the man relief. And I want to say, furthermore, I differ with the essayist with reference to the pain produced by these mucous patches, for nearly all I have had anything to do with have caused considerable pain. In other words, pain was a very important factor. We as dentists in working along with the physician in these cases can aid him and relieve the sufferings of these patients by means of these local treatments.

In conclusion, I believe it is a very safe rule for all dentists to look upon all inflammatory eruptions of the mucous membrane with suspicion. The apthous patch or an inflammatory condition with a ragged edge may be a mucous patch, and it is very essential for us to protect ourselves by the use of rubber fingers or rubber gloves, and it is safer for us to disinfect our instruments afterwards. I want to say further, that good clothes or social standing is no guarantee that one may not have syphilis, and while the patient may have the classic signs of differential characteristics given so eloquently by Dr. Logan, yet there is always an element of doubt, and we should act upon that doubt, and protect our patients and ourselves.

DR. THOMAS L. GILMER, of Chicago:

We have listened to a most excellent paper, and while possibly we may split hairs in regard to certain things in it, we must admit on the whole that the essayist has given us a most excellent presentation of the subject.

I think it is well for us, once in a while to turn aside from bridges, crowns, inlays, and study subjects of this kind. We should continually be on guard, as has been suggested, not only that we may not infect ourselves, but that we may not through negligence infect our patients. Through infected instruments we may carry from the mouth of a luetic patient the virus to the mouth of some refined, wholesome girl. Think of the crime! We should not only disinfect the cutting edges of our instruments, but their shafts as well. It is the latter portion of a contaminated instrument that is most likely to be the means of carrying the virus. I have here, loaned from Dr. Pusey's collection (which includes the slides),a colored photograph of the hand of a dentist with chancre. The infection was probably caused by the pricking of the hand with an instrument while operating on the mouth of an infected patient. We should always at once cauterize any injury inflicted on the hands while operating on the mouth, whether we suspect the patient to be syphilitic or not. If we know a patient is syphilitic we should protect our hands by rubber gloves.

Few patients are willing to acknowledge that they are syphilitic. One of the principal reasons for this is the general prevailing opinion that syphilis is a venereal disease. All chancres are not necessarily of venereal origin. We have chancre of the lips from kissing, from infected knives and forks, from dental instruments, public drinking cups, etc.

Syphilis seems to be lighter in its attacks in later years. Some believe this due to better knowledge of the treatment of the disease, while others maintain that it is because the human family is becoming gradually immune, through general inoculation. It is pretty generally known that one is immune to syphilis after a first attack.

The essayist said nothing about inherited syphilis. A general opinion prevails that the teeth manifest certain evidences of the disease in congenital syphilis; that is, the teeth are notched and imperfect in their formation, especially the incisors. It is quite possible that syphilis may cause malformation of the teeth, but there are many other diseases which cause similar malformations of the teeth. Scarlet fever or any disease which interferes with nutrition of the teeth may cause a change in their forms. To say that all notched and ill-shaped teeth are of syphilitic origin is heaping opprobrium on forbears wholly unwarranted.

We should be extremely careful in saying to a patient that he has syphilis when there are conditions in the mouth simulating it. Unless one is well qualified to diagnose syphilis, he had best not make a positive diagnosis. It is better to call suspected syphilitic sores stomatitis, which only means a sore mouth, until one is sure of his diagnosis.

The diseases which may be confused with syphilis are, epithelioma of the lip, deep tubercular ulcers of the tongue, acute ulcerous gingivitis, the so-called canker sores, and herpes.

As the essayist has said, in mucous patches the inflammation seems to stop at the margins, while in the so-called canker sores the inflammatory processes extend out into the adjacent tissue. I do not understand how leukoplakia could be mistaken for any of the syphilitic manifestations. I have seen many cases of leukoplakia, and there seems to be no change macroscopically in the epithelium except that it has changed its normal pink color for a perfectly white one. Dr. Logan said that leukoplakia does not attack the under side of the tongue. I have seen cases in which leukoplakia attacked the under surface of the tongue, its sides, the floor of the mouth, also the buccal mucosa as well.

There seems to be a pretty general idea that leukoplakia is a sequel of syphilis. Most cases of leukoplakia coming under my observation give a history of syphilis and patients thus infected have been generally great smokers. It is generally supposed that leukoplakia does not yield to any kind of treatment. Exposure to the x-ray has cleared up and seemingly cured several cases I have seen in the last few years. Carcinoma often follows leukoplakia, therefore this treatment should be tried, that we may, if possible, head off this dreaded disease.

Dr. Arthur D. Black, of Chicago:

My attention has recently been called to a rather peculiar case of syphilitic infection. A dentist, in performing an operation for a young lady, twenty years of age, let an instrument slip and it hurt her lip a little. He thought nothing of it at the time, nor did she. In due time she had a chancre of the lip at the position of the little cut. Naturally the dentist was very much exercised, and particularly so because the family had threatened to sue him as being the cause of the syphilitic lesion. He insisted that he had been very careful about sterilizing his instruments, and could not believe that he had infected the lip. He started an investigation, and was able within a few days to establish the fact that the young lady kissed a syphilitic young man on the night of the day on which he cut her lip. Who caused the syphilitic infection? If the dentist had not punctured the young lady's lip, probably she would not have had the infection. On the other hand, if she had not kissed the young man she would certainly not have had it. If the dentist had taken the precaution to have cauterized the little cut made in the lip with carbolic acid and swabbed it over with alcohol, possibly she would not have been infected.

Dr. Logan (closing the discussion):

First, I wish to take up Dr. Gilmer's statement that he had seen leukoplakia patches on the under surface of the tongue. If Gilmer says he has seen these patches on the under surface of the tongue, I am willing to accept his statement as correct; for I believe he has come in contact with more cases of leukoplakia than any one man with whom I am acquainted. I am told he has had in his clinic at one time, five cases of leukoplakia. I based my statements in this paper upon the few cases that I have seen and my knowledge of the literature on the subject. In my readings I have found the information that caused me to make the statements recorded in the paper; however, I am more than willing to stand corrected by such an eminent authority as Dr. Gilmer.

In reference to the exceptions taken to the paper by Dr. Bentley, wherein he maintained that pain was the usual accompaniment of the mucous patch, I simply wish to repeat the statement made in the paper. The uncomplicated mucous patch more frequently develops and exists without pain than with it. The history of Dr. Bentley's own case bears out the statement. He told you of his treating of a very severe case of syphilis, where extensive mouth lesions were present with the accompaniment of a good deal of pain. He states that he removed the extensive deposits formed on the teeth and put the mouth in a hygienic condition in every way that it was possible to do so. He then used argyrol, 10 per cent, on the mucous patches, and affirms that in a day or two the pain was relieved; all of which is fully in accord with the statements in the paper. But did the mucous patch leave? Probably not. Did not new patches appear? Probably yes. Yet pain of no consequence was present. All of which goes to prove that the cause of the pain found in his case resulted from a mixed infection. Another exception that he took to the paper was to the statement that the cause of the disease had not been demonstrated to the entire satisfaction of both the dental and medical professions. I am well aware that Dr. Bentley probably gained his information from the *American Medical Journal* of the year 1905.

If my memory serves me correctly, it was in the May number of that year, that the spirocheta pallida was first described as the specific organism of syphilis. Regardless of this article, I made the statement that the medical and dental profesions have not yet subjected the spirocheta pallida to all of Koch's laws—his four laws.

First—The specific organism must be found in every case of the disease and not in cases of other diseases.

Second—Must be isolated and grown on artificial media. Has that been done away from the blood in the human and in the chimpanzee?

Third—Its cultures when injected into another animal must produce the disease.

Fourth—The organism must be found in the body of the animal in which the disease was produced.

Although I believe that a specific organism is the cause of syphilis, I shall not change my statement herein made, until I have been shown that the spirocheta pallida has been subjected to the above Koch's laws. However, if it has been done I am willing to stand corrected.

Lastly, I wish to thank you all for your close attention and the kind consideration shown by the various gentlemen who have honored me by discussing my paper.

DISCUSSION OF THE PAPER BY DR. F. B. NOYES.

Dr. T. L. Grisamore, Chicago:

In by far the larger percentage of the mouths of the civilized races the teeth are more or less broken down by the ravages of decay.

The theories advanced for the decay of this the hardest tissue of the human body were many and varied until the late Dr. W. D. Miller brought forth the theory that caries is a result of the action of micro-organisms (or lactic acid forming bacteria).

In order to have caries formed, according to this theory, we must first have the proper micro-organism, next we must have a substance, such as the carbohydrates, which is capable of being acted upon by these micro-organisms by a fermentative process imparting an acid reaction to the medium. We should also remember that the decomposition of some substances, such as albumins, are not accompanied by an acid medium, but by an alkaline, and as a consequence will not cause destruction of the tooth structure; which is proved by the fact that we often have decomposition taking place in the pulp chamber and root canals, and its products be there confined for months without the slightest trace of disintegration of the tooth structure.

This acid formation must take place in such a manner as to allow the acid to be held in contact with the tooth sufficient time to permit a solution of the inorganic substance of the enamel, as it is a well known fact that a general acid condition of the saliva does not necessarily cause a destruction of the tooth structure, since in mouths immune for caries the saliva is often of a decided acid reaction.

Leading authorities have agreed that this is brought about by some systemic condition not thoroughly understood, which condition permits in some mouths the formation of a gelatinoid material as a by-product of the micro-organism, which acts as a protection for the bacteria and their by-products, thereby holding the acid media in contact with the tooth structure sufficient time to permit of its disintegration and at the same time allow the fermentation to continue.

The action of this acid is no doubt to dissolve out the cement substance between the enamel rods first, leaving the rods slightly projecting, forming a rough surface, which process continues until the enamel is penetrated its entire thickness and not until this time do the bacteria come in contact with the dentine, after which the disease takes a very different form, rapidly destroying the dentine and undermining the enamel wall.

As has been stated, the lactic acid fermentation must take place and be maintained for some time in contact with the enamel for the acid to affect its structure. There are certain locations on the surfaces of teeth most favorable for this action, such as pits, fissures, proximal and buccal surfaces. These locations are increased many fold in all forms of malocclusion and malalignment of the teeth, since the teeth in such mouths are not subject to the same amount of friction from the muscles, tooth brush or mastication, as teeth in perfect interdigitation, and again in the correction of these deformities too much stress can not be put on the importance of having the bands fit perfectly as possible and cemented securely in position. No band should ever be left for any length of time on the tooth just merely clamped or with any considerable amount of cement dissolved; for, as a rule, these teeth are more or less sensitive and the patient is more liable to neglect their thorough cleansing than if they were in normal condition.

If this be true, which there seems to be no doubt, the question for the scientific investigator to decide is how can the systemic condition be so changed as to alter the properties of the oral secretions to the extent of preventing the formation of these plaques or for the therapeutist to work out a combination of drugs which will have the property of removing this gelatinoid membrane from the teeth without injury to their structure or the soft tissues of the mouth.

DR. C. N. JOHNSON, of Chicago:

I hesitate to continue the discussion and inject anything of a technical nature into it after the beautiful things we saw on the screen. I will just refer to one or two practical points. What would have happened to the conviction of those men, if they had been in this audience and heard the paper, who have so strenuously opposed the theory of extension for prevention in the preparation of cavities?

The illustrations present sufficient argument to convince any man of the necessity of such extension. The penetrating effects of decay far beyond the actual visible breaking down of tooth tissue have been more vividly brought to my mind than ever before. You are all familiar with the publication of Williams and of that slide of a bicuspid showing the penetration of decay without the tissue being broken down. This appeared about 1896.

We have seen figure after figure of that character here tonight, and it is a most impressive lesson. The other thing I wish to refer to is the necessity for early operation in these cases. That is most significant from the illustrations which have been shown us this evening. If we would do our duty to our patients, we shall watch these surfaces in the future more than we have in the past, and if we do that and profit by the lessons taught us tonight, our patients will receive better service than they ever have before.

Dr. George W. Cook, of Chicago:

The things that impressed me most were the slides of the soft tissue which he threw upon the screen. I have attempted in the past to stain pathological tissue and bring out as near as possible the change that takes place in the tissue that has passed from a physiological to a pathological state. The demarcation of that condition sometimes is difficult to bring out, and now we can throw on the screen the absolute markings of the tissue in the colors that have been produced by the various stains of that tissue. This is a feature which I believe is going to revolutionize the exhibition and study of such work, because it is a difficult matter to take a class of students into a laboratory and have each one prepare and stain tissue for microscopic examinations. He has opened up a new thought on this subject. He has also brought out one thing that is very apparent, and that has never been touched on before, and that is the dissolving out of the cement substance between the enamel rods before the enamel rods are especially attacked. Some of these slides show the enamel rods themselves were but slightly, if at all touched by the action of the substance that produced the disintegration of the tooth, while the cement substance has been destroyed. As Dr. Johnson said, the paper illustrates very vividly to our minds the necessary extension for prevention, and when he is able to show us slides indicating where the disintegration had started and had extended over such a large surface, without any visible signs to the naked eye appearance. Dr. Noyes has demonstrated tonight that there are hundreds of teeth that are decayed and nobody knows anything about it.

I want to thank Dr. Noyes personally for presenting this admirable paper, and I for one appreciate more than ever the necessity of extension for prevention.

Dr. Noyes, (closing the discussion.):

Just a word in regard to one thing mentioned by Dr. Cook. Those of you who have not done histological work do not appreciate the importance of what Dr. Cook said. These colored photographs will be actually a new thing in showing not only to students, but to societies the things that we work with in the laboratory. For instance, in pathological conditions we depend on the difference of staining for the recognition of these conditions. A dead cell will not react with a stain as a living cell does, and as we make a specimen to determine what part of tissue is dead or necrosed, we find that out not by the appearance of the cell, but by its reaction to the stain, and that we never have been able to show to advantage. Now we can show it. That is a tremendous help. It is not simply that we make a picture and show it to the class at once; we do not want to do that exactly, but any of you who have had experience with classes know that students will look right straight at a thing and not see it. You put a section under the microscope and he looks through the instrument and does not see, but you put a picture of the same thing on the screen and point out to him what you want him to see and then he can look through the microscope and see it, and instead of showing it to one student at a time, you can photograph it and show it to a whole audience. In teaching and in showing the results of microscopic work, it certainly will be a tremendous help. But to go back to the paper.

I said it was not intended to be a consideration of caries, but a presentation of the things that have impressed upon me certain points regarding caries. The work is not mine. It is Dr. Black's. These things we never found and could not find until he devised a machine for grinding the sections in such a way as we have never been able to grind them before, and until the technic was worked up we never did it before, and when he ground the sections and showed these things under the microscope we saw the possibilities of this work. He pointed out that if we used certain chemicals we could photograph them. These are the things which partly were a new field and an enlargement of view to me, and for that reason I wanted to present them in that way. Incidentally, too, I feel as if they will be a help to you, as they have been to me; to make me look at things in the mouth and see them.

In the treatment of caries in the practice of dentistry, the place to study is at the chair, and every operation we do should be done not by habit or by custom or by rule, but by the exercise of critical observation and judgment. I do not believe we study our cases properly, for our own good and for our patients' good, and it seems to me that it is positively the redemption of the practice of dentistry. If all of dentistry is to make up operations and do things to earn money, is there anything harder on earth? But if there is room all the time for the exercise of all your faculties on things to attract your attention, to exercise your observation and your reason, to use your judgment, such as you would in sailing for a race or in playing a ball game, then there is some interest in it; there is some fun in it, and it becomes an interesting problem, and when we get so worn out that it is no longer interesting, fascinating and actually attractive, then it is time for us to go fishing and come back to it.

DISCUSSION OF DR. MCMILLAN'S PAPER.

DR. F. A. LANE, Macomb:

Mr. President, In opening the discussion on the subject of "The Superiority of Natural Teeth Over Artificial Substitutes," it seems to me that I am placed in a difficult position, as I cannot possibly conceive how anyone could (except perhaps in a few isolated cases) produce any reasonable argument to show that any artificial substitute could be superior or even approach the efficiency of the natural teeth.

Dr. McMillan says that prosthetic dentistry *will be* largely supplanted and over-topped by the growth of the idea of prophylaxis.

He states later on that twenty-five dentists who have each practiced for a period of over twenty-five years, state that they extract, on an average, about ten per cent as many teeth as they did twenty-five years ago.

It seems to me that this is a great and rapid advance, and all that the profession could hope for, and should it continue in the above ratio, we may hope to reach a state bordering on perfection in the next twenty-five years.

In my practice, I am quite sure that I do not make more than one set of artificial teeth where I made eight or ten sets a few years ago, and one of the dental supply men tells me that the sales of artificial teeth are not nearly so great as they were formerly.

When you stop to consider that in most towns and cities you can now get a good set of artificial teeth for about one half the money you could fifteen years ago, it again shows that there has been rapid strides toward better dentistry and that prophylaxis is rapidly supplanting prosthetic dentistry.

I believe that most of us do not give the necessary care and attention to the teeth of children, and often fail to impress on the parents the great benefit derived from the intelligent use of the tooth brush on both the deciduous and permanent teeth, and the necessity of treating the deciduous teeth in such a manner that they may be retained free from decay as long as possible and when decayed that they be filled, thereby preserving then until the proper time for their removal and preventing a great many cases of irregularity and a great deal of decay in the permanent teeth.

This thought, I believe, should not only be impressed on the parents, but also on the minds of the teachers in our public schools, as they could, if they would, bring this thought to the minds of the children, reach a great many that we do not see until it is too late for us to be of much service to them in preserving the deciduous teeth. And if only 14 per cent of the people of the United States employ dental services intelligently, it seems to me that it should be one of the requirements of our schools that the teacher bring this matter before the children and that some provision be made that the children be compelled to visit the dentist for an examination of the teeth at regular stated intervals.

In noting the tests as enumerated by Dr. McMillan, we of course cannot deny that they are all facts, furnished by reliable men, and these facts prove beyond a doubt that the natural are superior in every sense of the word to the artificial and should be preserved at any cost.

In behalf of the artificial teeth, however, I have this to say: When a patient has, through accident, neglect, ignorance, or carelessness of the thoughtless dentist, or the desire of the thoughtless but well meaning physician to relieve pain, had a number of valuable teeth extracted, we can then resort to crown and bridge work.

Crown work, properly done, comes as near the ideal as anything artificial could, and a well-made, practical piece of bridge work is one of the redeeming features of prosthetic dentistry. Yet I know of nothing more harmful or disagreeable in the practice of dentistry than a poorly made crown or poorly constructed and badly adapted piece of bridge work.

When a patient has failed to attend to his or her teeth at the proper time, either from lack of funds, carelessness, ignorance, or wilful neglect, and state truly, as we know they often do, that they cannot afford to pay forty, fifty or sometimes one hundred dollars to have their natural teeth filled, crowned or bridged, and we have every reason to believe that they probably will never be able to have the work done, then, rather than let that patient suffer, it is best to extract the offending teeth and supply a well-made, properly fitting artificial denture, or if the mouth is in such a condition that practical bridge work is impossible, here again is the place for either a partial or full denture of artificial teeth.

While there is no question as to the superiority of the natural teeth over artificial substitutes, yet as long as people have natural teeth to decay, there will be a necessity for artificial substitutes, and while the necessity for the same may, and undoubtedly will, be reduced to a minimum, there will always be a call for the artificial, and while we are striving to reach that state of perfection which will allow us to say we do not extract teeth, we must still strive to perfect ourselves in the branch of prosthetic dentistry to such an extent that when a patient becomes so unfortunate as to lose the natural teeth we shall still be able to supply an artificial denture that will be not only a necessity but something that can be valued as indispensable, a pleasure and a real benefit to the one so afflicted.

Dr. G. V. Black, of Chicago:

It seems to me it is too late for a serious discussion of this very excellent paper. That we should avoid the necessity of artificial teeth certainly goes without saying; that artificial teeth are far inferior to reasonably good natural teeth also goes without saying. We all know it, and yet to the one who has been so unfortunate as to lose his teeth, the artificial teeth are good things.

We as dentists, I am satisfied, do not realize the physics of our subjects, the pressures and counter-pressures that come into play. We are perhaps slowly realizing more and more of this, but it will require years yet for anything like a complete realization of these forces, and we will go on making substitutes that are too weak to stand the stress that can be placed upon them. We will learn a great deal more about the distribution of the stress upon artificial teeth as time goes on. When this subject was first under discussion (I suggested the measuring of these forces in 1893), immediately Dr. Patrick of Belleville and Dr. Dennis, of Chicago, constructed some instruments for this purpose, Dr. Patrick contending that it was only required to measure 75 pounds; that an instrument which would measure that many pounds could measure all the pressure any man could make with his teeth. But he made his instrument to measure 125 pounds. I took it between my molars, and closed up his machine and there was not much difficulty about it. We increased the registration to 275 pounds pressure, and plenty of people came along who could shut up the instrument. There were one or two other machines made that would register higher than that.

Now, gentlemen, every man who practices dentistry ought to have that instrument in his office continually for use in his daily practice. You will never realize what such an instrument will mean to you until you have it. It is quite an expensive instrument. If it could be sold in quantities, $15.00 or $20.00 would buy a good one, but so long as they have to be made singly they are expensive. I would no more undertake to make fillings with gold for a person that could not stand a pressure of 100 to 125 pounds on their teeth without pain than I would undertake to do any other foolish thing. I have put patients under training. They may give a record as low as 40 pounds with the natural teeth. Train them. If they chew their food they have to work with their teeth, and in the course of from one to two or three months they will give you a pressure of 150 pounds or maybe 200 pounds. Then I can fill their teeth without hurting them, so far as malleting is concerned, and I can make fillings that are good. That is so much on the value of that instrument in daily practice. What is the use of undertaking to fill teeth with gold oversensitive peridental membranes that have been made sensitive by disuse or by disease. We should not do it.

As to prophylaxis in dentistry, I do not know what the future will bring. The statement that clean teeth do not decay is undoubtedly correct. The more we learn about caries the more certain that becomes. That statement is a very old one, but how are we going to do the necessary cleaning? That is the question.

As to the comparative usefulness of artificial teeth, I was so unfortunate as to have my upper teeth all knocked out, and I am wearing a plate in the upper jaw and have had some interesting experiences. First, let me say the occlusion is one of the most important things in artificial teeth. When I had made the occlusion as well as I could by touch paper and the stone, I took carborundum into my mouth and completed it by grinding the carborundum, and I have an occlusion that is just as smooth and just as perfect as the occlusion of the natural teeth themselves. I can chew food fairly well, but it took me a good while to get the bone of upper jaw smooth enough, so that it would not bring pressure on individual high spots and make the soft tissue sore, but after some years of use these high spots have absorbed and I can chew beefsteak fairly well. I can exert more than thirty pounds pressure, perhaps forty pounds, but I will occasionally take a piece of bread in my mouth and try to crush it and make a sore spot in the endeavor. I cannot chew food as I did once, not by any means, after all the care I have taken. I think I have as good an arch as any one would want upon which to place an artificial set of teeth. It is broad and large, and yet I can not chew beefsteak as I did once.

The quotations that have been given as to the crushing strength required in different articles of food were correct at the time they were made. But in the continued effort upon the part of those who supply us with food to produce tender things, and particularly since the country butcher has been displaced by the cold storage meat, the crushing of these things has become lighter. I have pursued this investigation for years and they have been reduced continually. Cold storage meat can be crushed by one-third less pressure than the meat put on the market the same day the animal is killed, and it is well for us to remember that fact. Those who raise vegetables are vying with each other to produce the tenderest, consequently the crushing power usually required is being diminished continually and it is not well for the human race. It is not well for the use of the teeth, for if we are going to have good teeth we must make use of them, and there is nothing truer than this, that if we leave them without the necessary employment, they get into mischief. Teeth should be used vigorously, as it keeps the peridental membranes healthy, and it should be a pleasure to chew food. I remember very well the good times we used to have as boys and girls in picking hazel nuts and cracking them with our teeth. I never knew of a tooth having been broken in that way that was reasonably sound. But the peridental membranes developed strength, and it was a pleasure to chew things. One important thing in the management of a practice in operative dentistry is to keep the little folks and big folks chewing food vigorously with their teeth. Whenever they do this, you can handle their mouths as you please. You can put in fillings, but if you allow them to stop chewing their food properly the peridental membranes become sensitive; the whole mouth becomes sensitive. If you can handle these little people and make fillings early, keep them chewing their food, keep the teeth in vigorous action, there is a chance even for the worst of them. A lady called me to the door today, and I introduced her to one or two of the members here. When that lady was a little girl, between seven and eight years of age, I made fillings in the central incisors of gold, including the whole of the proximal surfaces, extending around onto the lingual surfaces of the teeth. There were three sittings in putting in each filling. They were put in in three pieces, but they are there yet, and those of you who saw her today saw nothing wrong with these teeth. These things constitute the greatest happiness of a practice in operative dentistry, and as long as we strive and make use of all these things that are valuable to us, we will be continually diminishing the necessity for artificial teeth.

Dr. T. W. Prichett, Whitehall:

It is universally agreed that the mastication of food is one of the most important processes by which the body is developed and kept in good repair. Our teeth are the active instruments in the performance of mastication. The natural teeth perform this service in the most comfortable and satisfactory manner when they are well developed, of good form, sound, well matched occlusally, and are kept clean and wholesome. Happy indeed should be the man or woman who can maintain these priceless organs intact through the period of natural life. If for any reason they are lost, distortion of the features, interference of speech, a crippled physiological function follows, and all that goes to make up the beautiful proportions of the "Godlike face divine"—suffer deterioration as a sequence to their destruction. Dentistry assumes to restore, in a comparatively large degree, the loss in looks, speech, and function. Do we as a profession measure up high in the restorative art? Will the average of our successes warrant us in declaring more than to say—sometimes? It is consoling and encouraging to know that even *sometimes* a marvelous success is attainable in prosthetic restoration. The signs of the times indicate an awakening to the fact, that most any old thing that has a mere resemblance to a denture, is not that *ideal* and practical denture that should merit a fee commensurate with the careful application of the best up-to-date methods. Recent improvements in the technique of construction make it possible to secure greater accuracy of "fit, fixation, and function—a mechanism that may be builded upon thoroughly demonstrable scientific and practical procedures. Some of the cardinal points are these, viz.: The management of the impression and cast in accordance with the form of the hard palate and alveolar ridges and the condition of the mucous membranes; the accuracy of the bite in height and the correct relation of the lower jaw to the upper when at rest in the glenoid fossæ; the selection of suitable teeth for the case; the plan of occlusion to gain the greatest possible amount of masticating force with the least amount of pressure upon the sensitive mucous membranes; the artistic arrangement of the teeth in conjunction with contour restoration—all of which require as careful attention to details in order to attain the highest expression of excellence, as is required in any operation within the domain of dentistry. It now appears that our greatest fault in the past has been with the occlusion—the mechanical form of the surfaces that grasp and act effectively upon the harder food substances with the least amount of muscular force. It is obvious that rounded or flat smooth surfaces will not do this. So if there is a modification of form that will give better results, why should we not employ it?

A modified use of Bonwill's method of mesio-distal grooving or channeling of the occlusal surfaces of the molars and bicuspids offer several advantages over other methods in common use, viz.: larger teeth may be selected with possibilities of securing greater potential energy upon their contact surfaces; when widely grooved from the center toward the buccal and lingual cusp eminences, a greater differential or grinding movement is permissible upon these surfaces by the swing of the mandible; the buccal cusps of the lower may be so formed as to have a cutting or shearing and penetrating effect upon fibrous foods when forced into the grooves of the upper; and a larger number of balancing contact points may be secured to readjust the plates, if disturbed in the act of closure.

These, we think, are the most important features to be considered in the construction of up-to-date dentures, and I need not take any more of your time to elaborate upon the technique, my purpose being more to encourage those who have not tried construction in conformity to the above outline—to hasten a beginning. It will pay when we get the right idea, and we do our work well—and yet as complete failure may be made by this as by any other method, if every step in the process is not performed with accuracy and precision.

Dr. H. W. McMillan, of Roseville (closing the discussion):

My paper is good history. It is worth repeating to your patients. It is something that never grows old. No amount of prosthetic dentistry will overcome the fact that there are patients growing up, who are needing operative dentistry very badly, and it is our duty to get hold of these patients. Prosthetic dentistry is not preventive dentistry. I believe in preventive dentistry, that is in operative dentistry. The same thing holds true with regard to the temperance question. It is like spending a lot of time and money toward reforming a drunkard who is down in the gutter and letting the younger generation go to ruin. I believe in improving the environment of the young rather than in the efforts toward reformation later. You should be interested in taking away injurious influences from your children.

Now a word about doing dental work cheaply for poor people. Poor people stand in their own light. Poor folks have poor ways. Like Roosevelt, I believe in giving the poor people a square deal as well as the rich, but do not give the poor people a better deal than the rich, but insist that they come to you in time.

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EDITORIAL.

THE CHANGING ATTITUDE OF THE DAILY PRESS TOWARD DENTAL SOCIETIES.

One of the most promising signs of the times relative to the attitude of the public—as represented by the press—to professional matters is found in the rapid change going on in the treatment of dental societies by the daily papers. Reference was made in our September number to the exceptional manner in which the press of Ottawa, Canada, reported the sessions of the Canadian Dental Association, giving as the papers did a very full and dignified report of the meeting without resorting to the time dis-honored gibes with which the average newspaper reporter has so long felt it necessary to be-sprinkle such reports.

Now comes the *Evening Bulletin* of Philadelphia with an editorial during the recent meeting of the National Dental Association at Boston, which is so much in advance of the usual treatment of the profession by the press in the past that it is reproduced here with great pleasure, as indicative of what the more enlightened representatives of the newspaper world are beginning to think of dentistry. Papers like those of Ottawa and the *Bulletin* of Philadelphia may rest assured that their dignified treatment of the profession is thoroughly appreciated. Here is the editorial:

"DENTISTS IN CONVENTION.

"The assembling of many hundreds of dentists in national convention in Boston bids us pause, not so much because of the forced reminder of toothaches, but because of the significance of the event. The dentist is a friend of mankind, as we freely admit in those major moments of our lives when we are not agitated occupants of the dental chair. The advance of dentistry is one of the great triumphs of the last half century, and the increased demands upon the profession—would it be straining a painful point to say its increased popularity?—are reflected in its growth in numbers.

"There was a time when anybody with good nerves and a mechanical knack could force his way into the practice of dentistry, whether he first underwent a course of scientific study or not. The growing usefulness of the profession is largely due to legislation which has excluded from it so many candidates who are not sufficiently equipped. Yet, in some of the states regulation of this kind is still very imperfect. The National Dental Association is entirely right in declaring itself in favor of uniform legislation on the subject of dentistry and uniform requirements for admission to its practice.

"Every practicable effort should be made to exclude botchers and bunglers from a calling which has an important bearing on human health and comfort."

A POST-GRADUATE STUDY COURSE.

The necessity is becoming more and more apparent for post-graduate study on the part of members of the profession in view of the rapid evolution of thought going on each year. If a man does not study after graduation he simply falls back into a rut, and is of little value to the profession. But to study alone without the stimulus of one's fellows is rather dull work and few men will persevere in it. The Illinois State Dental Society has inaugurated a study course which promises to be of immense value to the profession of the state, and if successfully carried out—as it surely will be—it means a very wide dissemination of knowledge among the members of the component societies.

It is impossible to explain the plan in detail in this issue, but those who are interested may obtain full information by applying to the secretary of the society, Dr. R. J. Hood, Sparta, Ill., who will furnish copies of the May Bulletin of the society containing an outline of the plan to those who wish them.

THE EDITOR'S DESK.

A VACATION ON TIRES.

We had been discussing the matter of a vacation. Fritz said that nothing would please him half so much as to take an automobile and tour through the country. "A vacation on tires?" I suggested. "Never mind how you name it," said Fritz, "that's what I should like. I wish you would inquire among your friends and see if you can find out a good car to get, and we will tour this summer. A man down my way has a Rattler and it seems to run all right. See what you can learn about it."

Will some benevolent individual in the rear end of the hall kindly arise and tell me if he has ever gone out to inquire about the best make of automobile? The experience is unique. The first man I tackled I had always supposed was my friend. I said, "What do you know about the Rattler?" "The Rattler!" he shrieked. And then the splinters flew. He riddled that car into kindling wood in no time. He metaphorically poised it on the tip of his finger and flicked it off into the nethermost depths of oblivion. "Now if you want to get a car that is a car," he said, "why don't you buy a Previous? That auto is the smoothest thing on wheels. Why, I've seen that car——" But I cannot report all he had seen about that car for lack of space and memory. When he got out of wind I turned to another friend and asked him confidentially what he thought about the Previous. "The Previous!" he exclaimed, scornfully. "Well, now, don't mention that machine in my presence, please, unless you want to give me nervous prostration. I wouldn't own a Previous if it was the last car on earth." "What about the Rattler?" I ventured. "Worse than the Previous—worse a hundred times. Why, that's a regular 'Ingersoll Dollar Watch' machine. Say, let me tell you something about cars. If you want a car that will do the work every day in the week and Sunday, too, and not leave you stranded in the ditch, you buy a Stamboul. Now, don't make any mistake about an automobile—just buy a Stamboul."

I soon tackled another friend. "What do you know about automobiles?" I asked. "The only car to get," he started out slowly and deliberately, "is a six-cylinder Gridiron. It has them all beaten to a standstill and there is no other car in its class." "Do you know anything about the Rattler or the Previous or the Stamboul?" I asked. "Know all I want to," he replied, disdainfully. "There isn't one of them that's worth the paint on their wheel rims. Why that Gridiron——" But I haven't blank paper enough to report him. I was crippled, but game, and went to another man, and inquired about the Rattler. "Got liver trouble?" he asked. "Because if you have the Rattler might be just the car you want. It will shake a man's liver into action if it won't do anything else. That's all it's good for, though," he added in a tone calculated to settle the matter. "Hold on," he said, as an afterthought; "it has one other virtue; it will stand without tying."

"Betsey."

I was growing interested and wrote Fritz that I thought the Rattler must be a pretty good car because they all knocked it so hard. Finally a gentleman to whom I was telling my troubles said to me: "Doctor, every man who owns an automobile is a liar. There is no more fundamental fact in existence than this. Of course most of them lie unconsciously because many of them are high-class gentlemen and would not stoop to anything mean, but it seems to be utterly impossible to own an automobile and not be prejudiced. And a man will lie like a trooper about his car and not know it." So there, Mr. Automobilist, put that in your pot and brew it.

Fritz rode in many automobiles and liked the Rattler better than any. Finally he went to the Rattler factory and examined all the parts carefully, and it ended in the purchase of a seven-passenger, thirty-two horsepower touring car. And this is what she did. Two greenhorns started out with her one morning on a two thousand mile trip. Neither had run a car before they ran her, and one of them—your obedient servant—didn't know a spark plug from a differential. He didn't even know whether the car was running south or north; but they started with their families from Chicago one fine morning and headed "Betsey," as the car had been christened, in the direction of Toronto, Canada. The party consisted of Fritz and Auntie, the Mater, the Collector and myself. My "Indian Girl" was up in Wisconsin attending a house party and "Alkali Pete" had gone by train to Toronto to attend a wedding of her cousin. We were all to meet in Toronto and tour from there—provided, of course, that "Betsey" behaved herself and remained right side up, with her nose pointed toward the rising sun.

Our first objective point was South Bend, Indiana, where we expected to stay the first night out. Our plan was to make the trip by easy stages and not attempt any fast running, with the double purpose of seeing the country perfectly and not taking any chances of accident. But you never can tell what an automobile will do, and Betsey stole over the ground so stealthily that we slept at Niles, Michigan, that night in spite of ourselves.

As we were leaving Chicago, between Kensington and Dolton we met the Y. M. C. A. runner in the relay race from New York to Chicago, carrying the silver tube in his hand containing the message to the Mayor of Chicago. The runner was a fine, lusty young chap, and I gave him a rousing cheer as he passed, but we left the vicinity of Chicago newspapers so soon that I have never yet learned whether or not the race was run within schedule time.

We were liberally supplied with road books and had little difficulty in finding our way. The roads were for the most part good, but the word "turn" appeared more frequently in the guide books than "variable winds" in the weather reports. We made Valparaiso, Indiana, for dinner and during this run we passed several stranded automobiles, to the drivers of all of which we proferred our assistance. There is an *esprit de corps* among automobilists while touring which is most delightful. You always hear a whoop and see a waving of the hands whenever two autos meet, and it is seldom that one car will pass another which is standing without slowing up to learn if any aid is needed. We were able to help several out on this trip, though fortunately for us we never had to accept assistance from others. It is true that we had to stop occasionally to make some minor adjustments, but during this entire trip we never passed one car that ever overtook us again. And the excruciatingly funny thing to us was that of the cars we passed one was a "Previous," one a "Stamboul" and one a "Gridiron."

(To be continued.)

DOMESTIC CORRESPONDENCE.

PASADENA, CAL., July 24, 1908.

DEAR MR. EDITOR.

In some way my paper entitled "Hand Tools," read before the Winnipeg Dental Club last winter and published in the June number of THE DENTAL REVIEW, escaped the hands of my assistant without its concluding paragraph, which I have since run across. It reads as follows:

"As a last word I wish to reiterate the worn and trite advice to keep instruments sharp. I have never forgotten the saying of a carpenter who was employed by my father to do odd jobs on the farm. With the usual frankness of a small boy I had said, "Seems to me, Mr. Towne, you spend lots of time sharpening your planes." "Let me tell you, young man," he replied, "that no use of time pays better than a mechanic puts in sharpening his tools." I believe that dentists generally do not spend half enough time sharpening hand tools, and I believe further that one who makes points for himself occasionally will be more particular as a rule about keeping them in order.

GARRETT NEWKIRK.

BOOK REVIEWS.

PRINCIPLES AND PRACTICE OF FILLING TEETH WITH PORCELAIN. By JOHN Q. BYRAM, D. D. S., Professor of Prosthetic Dentistry and Dental Ceramics, Indiana Dental College, Indianapolis. With 132 Illustrations. Published by Consolidated Dental Manufacturing Company, New York.

To those who are familiar with the author's methods it is unnecessary to state that this volume is most carefully and conscientiously prepared. Dr. Byram always brings the most painstaking effort to bear on everything he does and this book is a striking example of it. The work embodies every important phase of the subject, presented in a clear and concise manner, and amply illustrated by good cuts. It is confidently recommended to those who are interested in porcelain fillings as a great aid in attaining perfection in the work.

TRANSACTIONS OF THE JAMESTOWN DENTAL CONVENTION, held at Norfolk, Va., September 10, 11, and 12, 1907. Press of the *Dental Cosmos*. 1908.

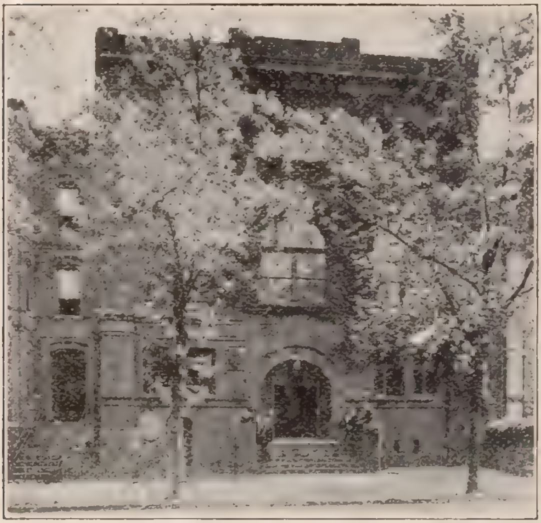
This is a very attractive volume of 118 pages, containing much matter of interest to the profession and embellished by the portraits of the officers and essayists. The work is well worthy a place in every dental library.

OBITUARY.

DR. J. O. WELLS.

DIED—Wednesday, August 26, 1908. Born in Newberry, S. C., February 13, 1871, where he resided and received his primary education as well as academic training, securing the B. A. degree in 1892 from Newberry College and his master's degree in 1894 from the same institution. He taught school for two years and then removed to Minneapolis in 1896, entering the State University for his dental education in the same year, graduating in 1899. Very few men enter dentistry with better preliminary training, he being an excellent mechanic as well. He taught in the university as professor of crown of bridge work from the year 1902, prior to that in the operating department, until his death. He was a man of deep culture and scholarly attainments. He was an idealist and enthusiastic worker in everything he did, as well as a leader and organizer. He was active in nearly all dental meetings and was president of the Minnesota State Dental Association in 1905. He believed in a more perfected future and lived accordingly. By his death, dentistry has lost a force and the university one of her ablest and best equipped teachers. Thus we mourn, but we shall always feel his higher spiritual influence. This is the triumph so beautifully referred to by Carlyle: "What, then, is man! What, then, is man! He endures but for an hour and is crushed before the moth. Yet in the being and in the working of a faithful man is there already (as all faith, from the beginning gives assurance) a something that pertains not to this wild death element of Time; that triumph over Time, and is, and will be, when Time shall be no more." ALFRED OWRE.

THE DENTAL COLLEGES OF AMERICA.

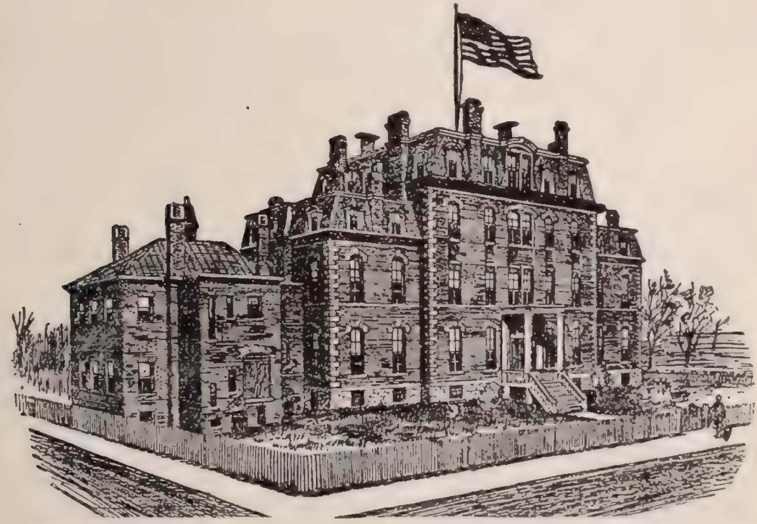


Dental Department Georgetown University, Washington, D. C. Total number of graduates to January, 1908, 38.

Birmingham Dental College, Birmingham, Ala. First class graduated 1894. Total number of graduates to January, 1908, 95.

THE DENTAL COLLEGES OF AMERICA.

Dental Department George Washington University, Washington, D. C. First class graduated 1888. Total number of graduates to January, 1908, 229.



Dental Department Howard University, Washington, D. C. First class graduated 1884. Total number of graduates to January, 1908, 137.

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

Inlay Anchorage:—Since the first of my experience in inlay work I was just mechanic enough instinctively to know that we could not depend entirely upon the adhesive properties of any of our cements for a retaining medium, and therefore I resorted to the dovetailed form of cavity in all instances where it was possible. I regard it as absolutely necessary.—*Hart J. Goslee, Chicago.*

Do Not Complain:—It is so easy to find something that is not right, and the temptation to do so is so great that every one of us ought to make it an invariable rule never to complain of anything unless we, at the same time, can suggest some betterment for it. Let us not get uncomfortably warm about the things that are not right unless we can see some way to make them a little better.—*Edmond Noyes, Chicago.*

For a Root Canal Dressing:—Wind a very little cotton around a gutta-percha root canal point. Dip in the agent to be used and place in the root canal. If the end projects soften with heat and pack into the pulp chamber. This means of carrying a dressing can be used even with such drugs as terebene and eucalyptol which soften gutta-percha, as the cotton allows it to be easily withdrawn.—*F. W. Stephan, Chicago.*

Vacuum Chambers:—If we simply think of the action of the air, we can readily see why the vacuum chamber is not practical. I am satisfied in my own mind that there never has been a vacuum chamber placed in a denture that ever did any good other than to afford more or less relief, which is not of any practical importance, when the periphery of the chamber does not extend beyond the hard area.—*J. H. Prothero, Chicago.*

Prosecuting Illegal Practitioners:—If you have an illegal practitioner in your midst, let the local society appoint a committee, whose business shall be to get the evidence and prosecute that man in the name of the local society. But do not go before a justice of the peace. You will get beaten if you do, for in a justice court the jury is judge of the law as well as of the evidence, and justice, constable and jury may prove friendly to the accused. You should go to the State's Attorney.—*J. D. Wilson, Danville, Ill.*

Cover for Table:—The use of white sheet celluloid as a bracket table cover has proven so satisfactory to me that I have thought it worth while mentioning it. I get the thin sheet celluloid (white) at an artists' supply store, selecting the proper dimensions, and fasten it in place with thumb tacks. It is not as noisy as glass, and will not permit the catching fast of an instrument when picking one up. It is easily wiped off with moist cloth at the end of each operation while instruments are being cleansed for the next.—*Grafton Munroe. Springfield, Ill.*

The Matrix:—The matrix should be used always in proximal cavities in the posterior teeth, whether the filling is gold or amalgam. You can pack your material much better, get a denser filling, contour it better, keep it away from the gum margin, and the filling is half polished when you remove the matrix. Particularly is this true with amalgam; the tendency is to pack the interproximal space full of the material, and I regret to say that this is many times left, resulting when hard in a constant irritation to the gum margin.—*W. E. Tennant, Fond du Lac, Wis.*

Length of Time a Plate Should Be Worn:—Generally speaking, plates should not be worn over five or six years. Oftentimes a patient will wear a plate too long after the ridge has absorbed away, and the edge of the plate has cut a series of grooves and the soft tissue will hang in flaps under the lip. These flaps should be cut away, the rim of the old plate cut down and covered with antiseptic gauze to keep the freshened surfaces of the lip and ridge from healing together; and in two weeks a plate may be made, which will be comfortable and useful.—*J. A. Bullard, Chicago.*

Taking a Plaster Impression:—There is frequently a condition of engorged circulation that it is well for the operator to take in hand, and in doing that, I think it would be a practical plan to have the patient take a large saline cathartic before breakfast, better four or five hours before the impression is taken, and then take the impression twice. The first impression will act as an astringent and absorb a large amount of moisture from the soft tissues of the mouth, and reduce the size of the mouth, and the second impression will be a much closer fit.—*D. R. Phillips, Chicago.*

Prevention of Putrefaction:—In considering all of the factors that enter into the prevention of putrefaction and permanently arrest the activities of the bacterial cell process upon dead organic substance, through the agents used as antiseptics and disinfectants, one of the striking differences in the decomposition process is whether the decomposing mass is confined in vitro, or whether the mass is confined in a pulpless tooth, in which the apical end of the root has been sealed. For instance, it requires a great deal more of the agents to arrest the decomposition in the tooth than it does in the test tube.—*George W. Cook, Chicago.*

Conditions Necessary to Retain a Plate in the Mouth:—The conditions necessary to retain a plate in the mouth are close adaptation of the plate to the soft tissues, relief in the palatine or other portions to prevent undue pressure on the hard areas, and proper anatomical occlusion of the teeth so that the plates will not tip under the stress of mastication. This is accomplished by securing the three-point contact. The viscosity of the mucous and atmospheric pressure are important agents in retention. The tongue and cheek muscles, acting as a pump, practically make a partial vacuum of the entire palatine portion of the plate.—*H. F. Methven, Chicago.*

Preparation of a Plaster Impression:—Immediately after the impression has been taken it should be scraped when we find hard places in the mouth. I prefer coating the rim of the impression with shellac, and brushing the part to be covered by the plate with soap and water just before pouring the plaster for the model. As soon as the plaster hardens, the impression cup should be removed to prevent as much as possible the bulging of the palatal portion of the impression and model. The model, after having been separated, should be trimmed where we want the plate to seat itself more deeply into the tissue, the amount depending on the kind of plate to be made.—*L. K. Stewart, Chicago.*

Educate Your Patients:—The spread of dental knowledge during the last twenty-five years has been accomplished largely by the conscientious dentist, but with all this labor, think how little the average person knows about the dental organs. Here is a portion of the code which should be emphasized, that our mission is not alone to prevent suffering and thus earn a livelihood, but we must be teachers as well. A large portion of our patients are receptive and are willing to accumulate a certain amount of useful information. Do not talk to them in uncertain terms or high sounding phrases, but in the simple language that anyone of intelligence can understand.—*Charles A. Cheney, Fond du Lac, Wis.*

Separating Fluid for Impressions:—To a strong, boiling solution of borax add shellac scales till the liquid becomes very dark in color, boiling and stirring constantly till the shellac is all dissolved. It makes a muddy looking solution which is, however, a good chemical solution of very dark red color. In using this solution it is not necessary to wait for the impression to dry, but on taking it from the mouth it is rinsed, dried and given a thin coating of the fluid, allowed to stand one or two minutes—long enough to mix the plaster for the model—and the model poured at once, thus allowing no time for the impression to become distorted. When separated the model will be found to have a very desirable, glossy surface.—*Lucien H. Arnold, Chicago.*

Inlay Abutments:—I have had some experience with what I think were pretty well set inlays that I have used as abutments in short bridges. I have been wondering how much mobility there is in teeth and I am trying to determine how long the cement behind the gold inlay will withstand the mobility, where the bridges are subjected to the ordinary service required of them. I have had one bridge loosen and the patient came to me and said the bridge had been troubling her for three or four weeks. After I removed and examined it, I found some decay and set it temporarily. She has more cement behind that inlay now than it was when first set. This is annoying and leads one to wonder what may be the condition of other short bridges anchored with large inlays.—*E. K. Blair, Waverly, Ill.*

MEMORANDA.

A NEW FACTORY.

The Antikamnia Chemical Company is building a new factory in St. Louis to cost $75,000.

NORTHERN ILLINOIS DENTAL SOCIETY.

The twenty-first annual meeting of the Northern Illinois Dental Society will be held at Freeport October 21 and 22, 1908. Mark the date in your appointment book and be sure and come for both days. The supervisor of clinics and program committee promise one of the best meetings of the society. C. L. SMITH, Secretary, St. Charles, Ill.

SOUTHERN ILLINOIS DENTAL SOCIETY.

The twenty third annual meeting of the Southern Illinois Dental Society will be held in Greenville on Tuesday and Wednesday, October 27 and 28. We hope that all interested in the welfare of this society may unite with us in our efforts to make this a banner meeting.

HARRY K. BARNETT, Secretary.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Minnesota State Board of Dental Examiners will be held at the Dental Department of the State University in Minneapolis, Minn., on November 10, 11 and 12, 1908. All applications must be in the hands of the secretary by November 1. For further information address DR. GEO. S. TODD, Secretary, Lake City, Minn.

ILLINOIS EASTERN HOSPITAL FOR THE INSANE.

DENTAL WORK FOR AUGUST.

Gold crowns, 0; gold fillings, 5; silver fillings, 71; treated, 26; roots filled, 15; cleaned, 17; extracted, 206; cement fillings, 2; plates, 2. This is the only institution of its kind which employs a dentist to do regular work, which speaks rather well for Illinois. GEO. A. MILLS.

A DENTAL CURE.

Dr. Brown, a veteran dentist, was much annoyed by one of his patients, a maiden lady who insisted on clutching hold of his hand whenever he hurt her. He remonstrated, but in vain. At last he ceased work and said:

"Madam, if you really want to hold my hand, I will stop and let you do so."

There was no more trouble from that source.

(True.)

OHIO STATE DENTAL BOARD.

The State Dental Board of Ohio will meet in regular session in Columbus on October 20-23, 1908, for the examination of applicants for license to practice dentistry in this state. Only graduates of reputable dental colleges are eligible to appear for examination. All applications must be in the hands of the secretary at least ten days before the date of the examination, together with the fee of $25. For further information and blank applications address the secretary, F. R. CHAPMAN, 305 Schultz Bldg., Columbus, Ohio.

AMERICAN SOCIETY OF ORTHODONTISTS.

In view of the fact that the Presidental election occurs on one of the dates originally set for the meeting of the American Society of Orthodontists, the board of officers have decided to change the dates, and the meeting will be held at "The Burlington" in Washington, D. C., on Thursday, Friday and Saturday, November 5, 6 and 7, 1908. Special rates have been secured at the Dewey Hotel, Fourteenth and L streets, N. W., where accommodations may be engaged. **FREDERICK C. KEMPLE**, Secretary.

DINNER TO DR. E. J. PERRY.

Dr. E. J. Perry is retiring from practice to engage in ranching in southern Idaho, and his friends in the dental profession gave him a complimentary dinner at the Stratford Hotel on Saturday evening, September 12. Dr. Perry is one of those rare individuals who by virtue of inherent qualities of heart and brain invariably win the affections of men. His going away from Chicago is universally regretted by the profession, and the hope is generally expressed that he may find his new environment altogether congenial and that he may live to a happy and prosperous old age.

RECENT PATENTS OF INTEREST TO DENTISTS.

894,702 Toothpick stand. J. Sahlin, Stockholm, Sweden.
895,159. Producing amalgams or alloys. C. F. Carrier, Jr., Elmira, N. Y.
894,983. Dental face-bow. J. H. Prothero, Chicago, Ill.
896,432. Tray for instruments. C. F. Booth, Canandaigua, N. Y.
896,209. Toothpick machine. W. F. Hutchinson, Nyack, N. Y.
896,662. Rubber-dam holder and cutter. A. B. Prentis, Brandon, Oregon.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

AMERICAN DENTAL SOCIETY OF EUROPE.

At the thirty-fifth annual meeting of the American Dental Society of Europe, held in London, July 31 to August 4, the following officers were elected for the ensuing year: President, Dr. John W. Gale, Cologne, Germany; vice-president, Dr. William S. Davenport, Paris, France; honorable treasurer, Dr. William M. Cooper, Frankfurt-on-the-Main, Germany; honorable secretary, Dr. T. G. Patterson, Geneva, Switzerland. The next meeting will be held at Wiesbaden, Germany, during Easter week, 1909. The exact dates of which will be decided by the executive committee.

T. G. **PATTERSON**, Hon. Sec'y.
2 Quai des Eaux Vives, Geneva, Switzerland.

NATIONAL DENTAL ASSOCIATION OFFICERS FOR 1908-09.

At the twelfth annual meeting of the National Dental Association, held in Boston, Mass., July 28 to 31, 1908, the following officers were elected for the ensuing year: V. E. Turner, Ralleigh, N. C., presndent; Wm. Crenshaw, Atlanta, Ga., vice-president for the South; Eugene H. Smith, Boston, Mass., vice-president for the East; W. T. Chambers, Denver, Colo., vice-president for the West; H. C. Brown, Columbus, Ohio, corresponding secretary; Charles S. Butler, Buffalo, N. Y., recording secretary; A R. Melendy, Knoxville, Tenn., treasurer. Executive committee, new members, J. D. Patterson, Kansas City, Mo.; C. J. Grieves, Baltimore, Md.; H. B. McFadden, Philadelphia, Pa. Executive council, H. J. Burkhart, chairman. Batavia, N. Y.; B. Holly Smith, Baltimore, Md.; F. O. Hetrick, Ottawa, Kas.; A. H. Peck, Chicago, Ill.; W. E. Boardman, Boston, Mass. Birminham, Ala., was selected as place for 1909 meeting. H. C. **BROWN**, Cor. Sec'y.,
185 East State street, Columbus, Ohio.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago, at the University of Illinois Dental Department, corner Honore and Harrison streets, beginning Monday, November 9, 1908, at 9 a. m. Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school, or dental department of a reputable university, or (3) is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board. Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty ($20) dollars, with the additional fee of five ($5) dollars for a license. Address all communications to J. G. Reid, Secretary,

1204 Trude building, Chicago, Ill.

OFFICERS AND COMMITTEES OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

President, F. A. Shotwell, D. D. S., Rogersville, Tenn.; vice-presidents, for the South, J. R. Wallace, D. D. S., Louisville, Ky.; for the east, A. L. Midgley, D. D. S., Providence, R. I.; for the West, J. J. Wright, D. D. S., Milwaukee, Wis.; secretary and treasurer, Charles A. Meeker, D. D. S., 29 Fulton street, Newark, N. J. Committee on colleges, James G. Reid, D. D. S., chairman, 1204 Trude building, Chicago, Ill.; J. A. Hall, D. D. S., Birmingham, Ala.; Starr Parsons, D. D. S., Washington D. C. Tabulating committee, Alphonso Irwin, D. D. S., chairman, Camden, N. J.; S. C. Rubey, D. D. S., Clinton, Maine; C. P. Pruyn, D. D. S., Chicago, Ill. Joint tabulating committee of the N. A. D. E. and N. A. D. F., John F. Dowsley, D. D. S., chairman, 175 Tremont street, Boston, Mass.; Alphonso Irwin, D. D. S., Camden, N. J.; James G. Reid, D. D. S., Chicago, Ill.; H. E. Friessell, D. D. S., chairman, Pittsburg, Pa.; R. M. Sanger, D. D. S., East Orange, N. J.; J. H. Kennerly, D. D. S., St. Louis, Mo. Joint conference committee of the N. A. D. E. and N. A. D. F., George E. Mitchell, D. D. S., chairman, Haverhill, Mass.; J. A. Hall, D. D. S., North Birmingham, Ala.; Frank O. Hetrick, D. D. S., Ottawa, Kas.; H. E. Friessell, D. D. S., Pittsburg, Pa.; R. M. Sanger, D. D. S., East Orange, N. J.; J. H. Kennerly, D. D. S., St Louis, Mo Publication committee, J. E. Chase, D. D. S., chairman, Ocala, Fla.; G. L. Todd, D. D. S., Lake City, Minn.; W. H. de Ford, D. D. S., Dés Moines, Iowa. Committee on Credentials, F. C. Walker, D. D. S., chairman, Brooklyn, N. Y.; G. M. Griswold, D. D. S., Hartford, Conn.; J. B. Stiff, D. D. S., Fredericksburg, Va. Committee for promoting a system of uniform examinations, T. F. Turner, D. D. S., chairman, 721 Olive street, St. Louis, Mo.; G. C. Marlow, D. D. S., Lancaster, Wis.; H. C. Brown, D. D. S., Columbus, Ohio. Committee on contracts and accommodations, Charles A. Meeker, D. D. S., Newark, N. J. Committee on resolutions, Forest G. Eddy, D. D. S., chairman, Providence, R. I.; H. B. McFadden, D. D. S., Philadelphia; O. H. Simpson, D. D. S., Dodge City, Kas. Delegates must send credentials signed by the president and secretary of their respective boards ten days previous to the annual meeting, to the general secretary.

THE

DENTAL REVIEW.

Vol. XXII. CHICAGO, NOVEMBER, 1908. No. 11

SOME PHASES OF PROSTHETIC PROCEDURE.*

BY J. H. PROTHERO, D. D. S., CHICAGO, ILL.

In presenting this illustrated review of certain phases of prosthetic procedures to the members of this society, no claim to originality is made, and no criticisms are offered as to the special points of merit or weakness of any particular method or appliance. So far as possible, credit has been given to the designers of the attachments and methods mentioned. This review will deal principally with the restoration of the lost natural teeth by means of dentures of the removable type.

The origin of dental prosthesis is unknown. Among all nations and tribes, almost without exception, in all lands, and from time immemorial, the teeth have been regarded as necessary adjuncts of beauty as well as of utility. This being the case, efforts were made even in prehistoric times to replace these lost useful organs by artificial means. Abundant evidence exists to prove this fact.

Fig. 1. Dr. J. L. Van Marter, through the *Independent Practitioner,* describes a case in which two teeth were replaced by means of bone substitutes attached with gold bands to proximate and adjoining teeth. This specimen was found in the dental arch of a mummy exhumed from an Etrurian tomb near Corneto, Italy. Authorities agree that it is from 2,500 to 3,000 years old.

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*Read before the Illinois State Dental Society, May 1, 1908.

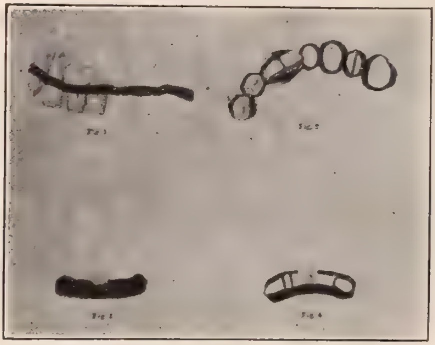


Fig. 1. Dr. Van Marter's Case.

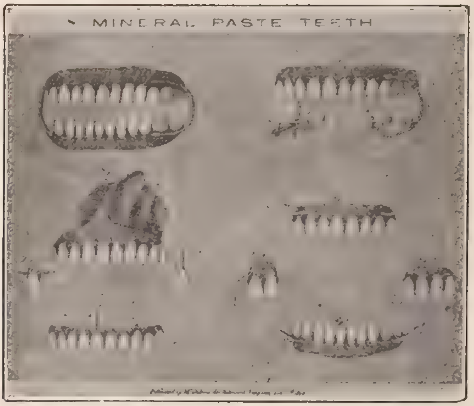
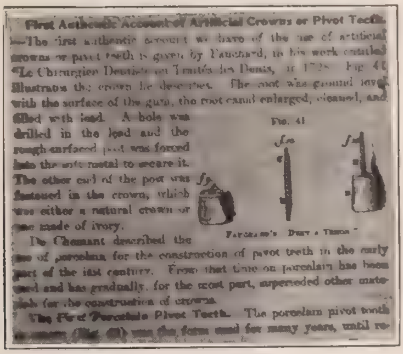


Fig. 2. De Chemant's Mineral Teeth.

Fig. 2. But little progress, however, seems to have been made for many centuries and it was not until within the last 150 years or until the advent of mineral or porcelain teeth that the foundation was laid on which the present system of prosthesis rests.

Fig. 3. Even within the last century the practice of replacing lost crowns with other natural crowns or those carved from bone or ivory, was in vogue to a considerable extent.



First Authentic Account of Artificial Crowns or Pivot Teeth.—The first authentic account we have of the use of artificial crowns or pivot teeth is given by Fauchard, in his work entitled "Le Chirurgien Dentiste ou Traités des Dents," in 1728. Fig. 41 illustrates the crown he describes. The root was ground level with the surface of the gum, the root canal enlarged, cleaned, and filled with lead. A hole was drilled in the lead and the rough surfaced post was forced into the soft metal to secure it. The other end of the post was fastened in the crown, which was either a natural crown or one made of ivory.

Du Chemant described the use of porcelain for the construction of pivot teeth in the early part of the last century. From that time on porcelain has been used and has gradually, for the most part, superseded other materials for the construction of crowns.

The First Porcelain Pivot Teeth.—The porcelain pivot tooth [illegible] (Fig. 42) was the form used for many years, until re-

Fig. 3. Bone or Ivory Pivot Teeth.

Defective methods of root treatment without doubt retarded the practice of crowning teeth, the usual method of procedure being to extract the offending member and replace it with one supported by a baseplate.

The year 1869 marked the beginning of an important era in our present system of crown and bridge work. Previous to that year no definite or well defined methods of procedure were followed in the crowning of teeth. It naturally followed that bridge construction was in a still cruder state, since crown work forms the basis of bridge-work.

In the May number of the *Missouri Dental Journal,* 1869, Dr. W. N. Morrison of St. Louis described the construction of a gold shell molar crown, which he attached to the remaining portion of the natural tooth with oxy-chlorid cement. Dr. B. Beers of San Francisco patented a similar crown in 1873 and the credit of invention of this crown is often erroneously ascribed to him.

The introduction of the gold crown very materially simplified the attachment of substitutes to the natural teeth in bridge-work.

Fig. 4. In the June number of the *Missouri Dental Journal* of the same year, Dr. G. V. Black described a method of constructing a porcelain faced gold crown, backed with gold. The attachment to the root was secured by means of a threaded gold wire which entered a threaded opening in the gold filled root. So far as the writer can learn, this was the first description of a combination gold and porcelain crown of this character. The crown patented by Dr. Richmond, several years later was a slight modification of this crown.

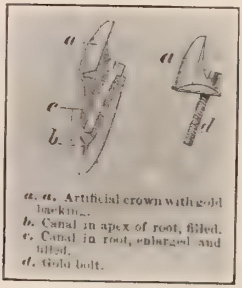

a
a
c
b.
d
a. a. Artificial crown with gold backing.
b. Canal in apex of root, filled.
c. Canal in root, enlarged and filled.
d. Gold bolt.

Fig. 4. Dr. Black's Case. 1869.

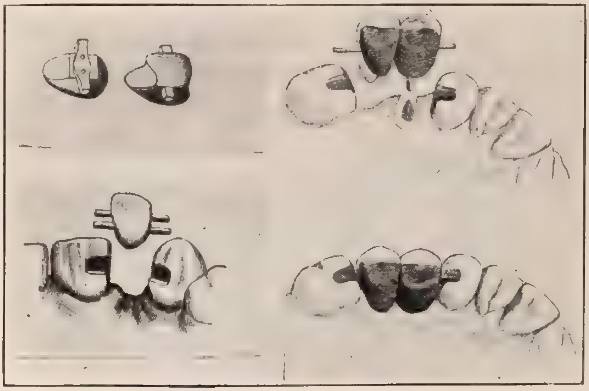


Fig. 5. Bing Bridge.

Fig. 5. The October *Dental Cosmos* of 1869 contained an article by Dr. H. D. Bennett of Paris, France, describing the method of bridging in missing teeth as practiced by Dr. B. J. Bing of that city. This method consisted in backing plain or gum-section teeth with gold and soldering a bar to the same, the ends of which extended mesially and distally beyond the facing. These projecting ends entered properly located cavities in the proximating teeth and were enclosed in fillings.

The reports of these three operations appearing in the same year, unquestionably gave a greater impetus to crown and bridge construction than work of this character had previously received. From that time until the present there has been constant and increasingly rapid progression.

This progression has not been without hindrance. Many failures have resulted because of a misunderstanding of conditions essential to success, but these failures have proven stepping stones to progress.

Like most new methods of practice introduced, which promise good results, fixed bridge-work was indiscriminately applied in some cases where for hygienic as well as esthetic reasons dentures of the removal type would have proven more serviceable.

Unhygienic conditions resulting from the improper application of fixed bridges have brought the profession to realize that substitution in this manner, while indispensable in well selected cases, has its limitations.

To supply those cases in which fixed bridges are contraindicated, various forms of dentures of the removable type are employed, known as removable bridges and partial dentures.

Naturally in this field also failures have resulted, principally on account of the inadequate means of attachment of the denture to the remaining natural teeth. This constitutes the vulnerable point and proves the strongest objection to substitutes of this type. For a number of years this phase of the problem has received much thought with the result that various devices have been suggested and presented to the profession which are intended to, and do to a great extent, obviate the difficulty mentioned.

These appliances usually consist of two parts, one of which is permanently fixed to the natural tooth, the other being attached to the substitute. In most cases the telescoping principle is utilized, one of the attachments fitting so closely into the other that some degree of force is required to separate them. They differ, however, in outline, the triangle, rectangle, cylinder, and sphere being the prevailing forms in use. Such appliances combined at times with certain forms of common clasps comprise the present system of attachments now most generally used.

The degree of success attending the application of any of these means of retention depends on the judgment of the operator in the selection of cases and in the skill displayed in construction.

We will now as briefly and rapidly as possible present a series of slides illustrating old as well as new methods for the retention of partial dentures.

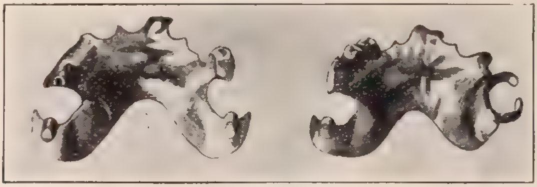


Fig. 6. Drs. Hunter and Stokes.

Fig. 6 represents a method of retention suggested by Drs. Hunter and Stokes, of London, which consisted in soldering tubes to the baseplate and fitting into them pegs of wood so as to project and come in contact with the natural tooth. (Richardson, 1860.)

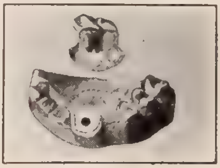


Fig. 7. Split pivot attached to plate. Dwinelle-Richardson.

Fig. 7. Pivots of metal attached to baseplate and which enter gold-lined root canal. Dr. Dwinelle suggested splitting the pivots and spreading the ends slightly to insure greater stability. (Richardson, 1860.)

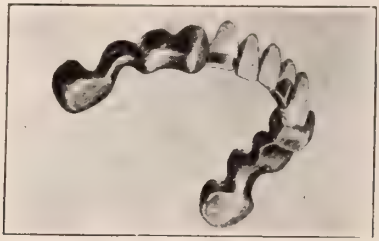


Fig. 8. Dexter.

Fig. 8. Dr. J. E. Dexter constructed a removable appliance consisting of split spring clasps fitted over permanently crowned

teeth, the substitutes being attached to the clasps. (*Dental Cosmos,* July, 1883.)

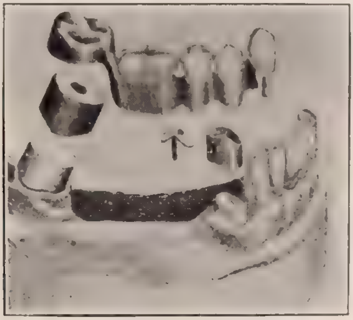


Fig. 9. Starr.

Fig. 9. A bridge constructed by Dr. R. W. Starr, consisting of a molar crown over which telescoped one of contour form. The anterior abutment consisted of a fixed cap and hollow tube post for the cuspid, into which the dowel of the cuspid crown fitted. The substitutes were carried by these two removable abutments. (*Dental Cosmos,* August, 1886.)

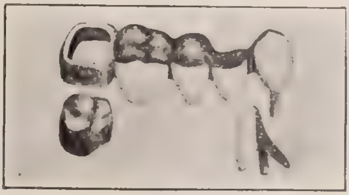


Fig. 10. Richmond.

Fig. 10. A Richmond removable bridge consisting of a band fitted to a molar crown and a V-shaped cuspid crown with dowel which entered the capped cuspid root in which a tube was enclosed. (*Dental Cosmos,* August, 1886.)

Fig. 11. Dr. J. L. Davenport combined an ordinary molar clasp, a telescope crown and two cuspid crowns with dowels adjusted to caps carrying tubes, consisting in all of a 12-tooth denture which he stated was the most perfectly fitting substitute he ever constructed. (*Dental Cosmos,* November, 1887.)

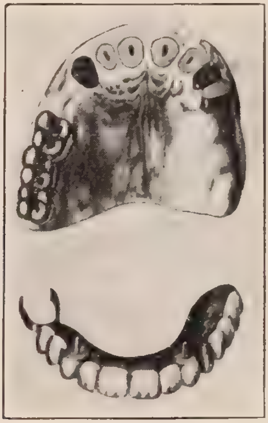


Fig. 11. Davenport.

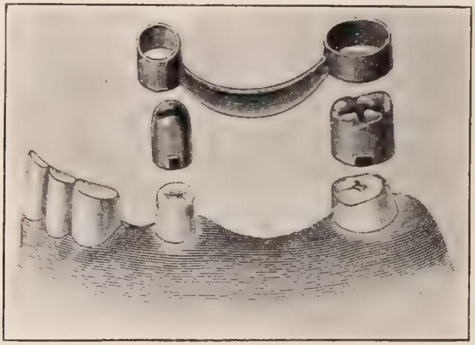


Fig. 12. Evans.

Fig. 12. A case in which the third molar and second bicuspid were fitted with crowns having stops at the gingival border. The substitutes were carried by telescoping bands. (Described by Dr. Geo. Evans, *Dental Cosmos,* December, 1888.)

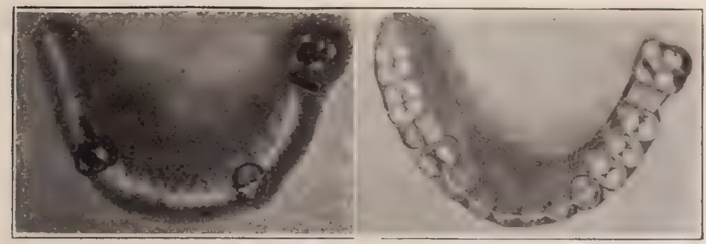


Fig. 13. Fig. 13A. Parr.

Figs. 13-13a. Rectangular box-like attachments fixed to left first bicuspid and right second molar. Dr. H. A. Parr (*Dental Cosmos,* June, 1889).

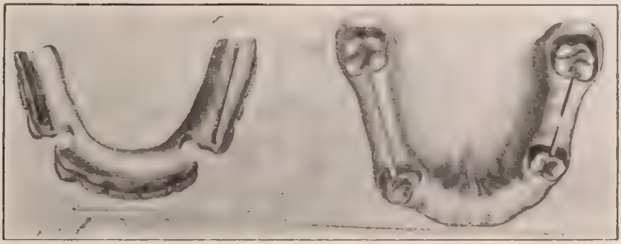


Fig. 14. Parr.

Fig. 14. Vulcanite saddle bridge held in position by crowns connected by square iridio-platinum bars. Dr. H. A. Parr (*Dental Cosmos,* June, 1889).

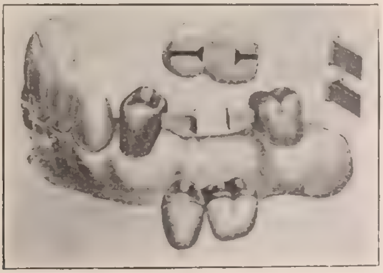


Fig. 15. Curtis.

Fig. 15. Dr. G. L. Curtis suggested fixed crowns to which bars with dovetailed ends were attached which passed into corresponding slots in the substitute. (*Dental Cosmos*, February, 1890.)

Fig. 16. Dr. C. S. Alexander constructed an appliance consisting of crowns carrying dovetailed projections which entered corresponding slots in the substitute. The attachments being at right angles with the long axes of the teeth, the substitute was placed in position buccally. (*Dental Cosmos,* January, 1891.)

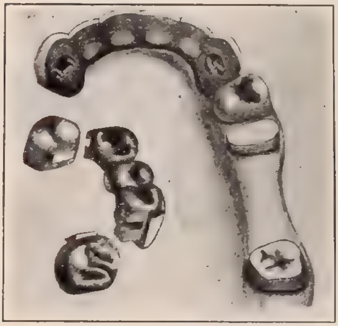


Fig. 16. Alexander.

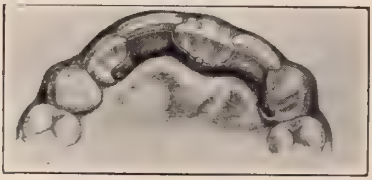


Fig. 17. Alexander.

Fig. 17. A removable appliance held in position by projecting pins placed on the lingual aspect of the natural teeth. Dr. C. S. Alexander. (*Dental Cosmos,* December, 1891.)

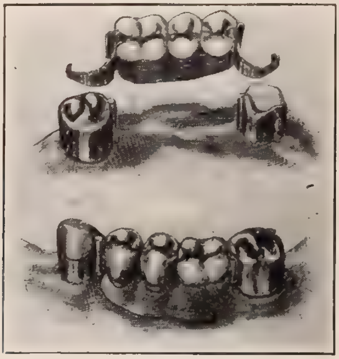


Fig. 18. Bryant.

Fig. 18. A porcelain bridge retained by partial clasps, the ends of the clasps being bent to grasp perpendicular projections on the anchor crowns. Dr. E. A. Bryant (*Dental Cosmos,* March, 1897).

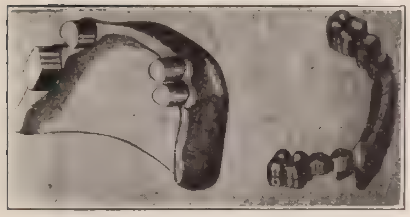


Fig. 19. Wimmer.

Fig. 19. A substitute retained by telescoping bicuspids and molars. Suggested by Dr. A. W. Wimmer. (*Dental Cosmos*, May, 1901.)

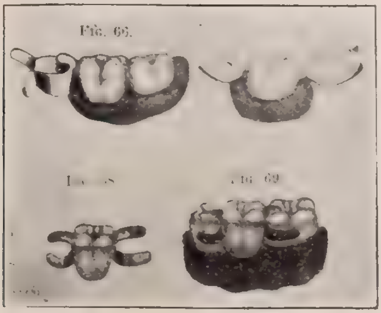


Fig. 20. Head. Fig. 20A. Bliven.

Fig. 20. Porcelain bridge with stop clasps. Dr. Joseph Head (*Dental Cosmos,* October, 1902).

Fig. 20a. A stop clasp, single tooth substitute. Dr. C. F. Bliven (*Dental Cosmos,* June, 1903).

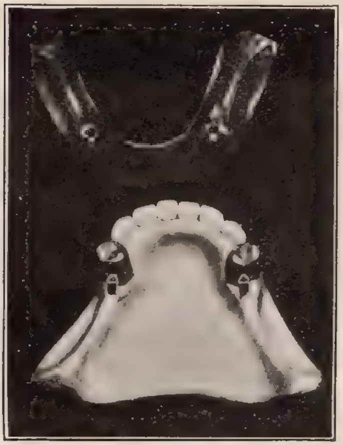


Fig. 21. Griswold.

Fig. 21. The Griswold appliance consists of a triangular spring for attachment to crowns and a telescoping box of similar form fixed to the substitute.

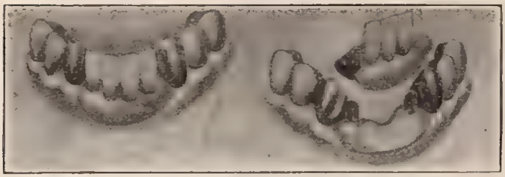


Fig. 22. Condit.

Fig. 22. The Condit attachment consists of an outer partial tube closed at one end with post in the center. Between this post and the inner walls of the tube another partial tube is fitted which is attached to the substitute.

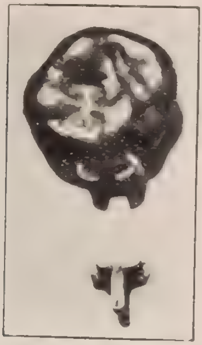


Fig. 23. Morgan.

Fig. 23. The Morgan attachment consists of a socket or keeper fixed to the crown and a flanged anchor which is an integral part of the substitute.

In adjusting attachments in which the telescoping principle is made use of, care should be taken to see that they are parallel with each other in order to facilitate the introduction and removal of the substitute. Various forms of Jigs are used for this purpose.

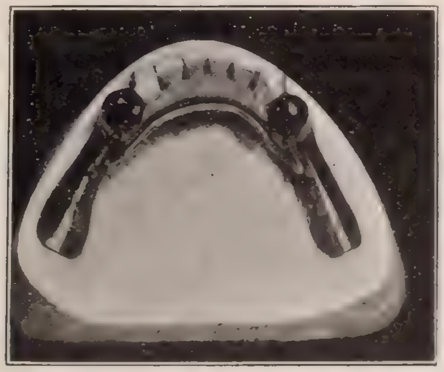


Fig. 24. Roach.

Fig. 24. Dr. F. E. Roach has designed an attachment consisting of a split ball which fits closely within a tube. Either ball or tube may be attached to the anchor crown as convenience indicates. This appliance differs from other forms of attachments for the reason that by its use lateral strain upon the anchor teeth is obviated and no paralleling device for adjusting the attachments is required.

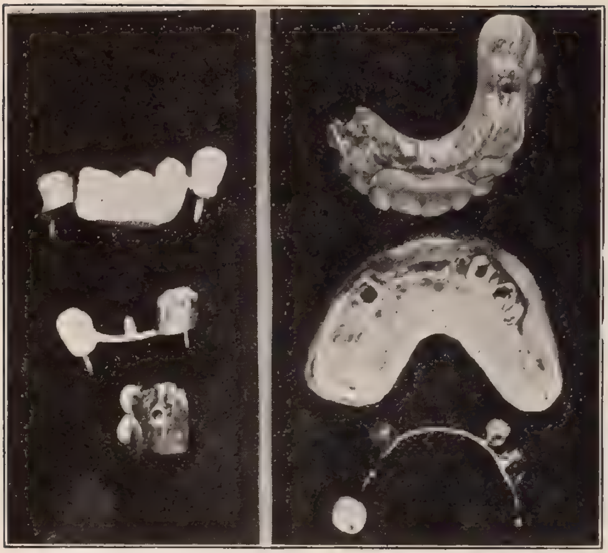


Fig. 25. E. J. Perry.

Fig. 25. Some cases presented by Dr. E. J. Perry, in which a bar connecting the abutment crowns is combined with the Roach attachment for the retention of the saddle denture.

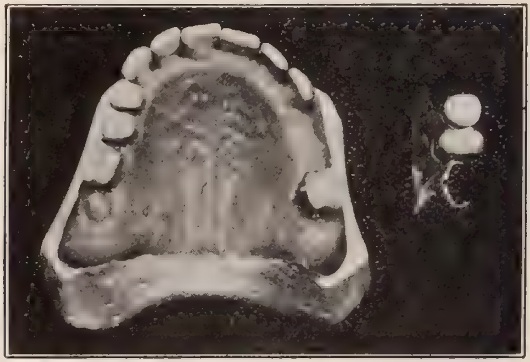


Fig. 26. Schwartz.

Fig. 26. Some cases presented by Dr. G. W. Schwartz in which the lingual half of the metal framework of a porcelain crown is

constructed in the form of a partial cylinder, the body of the crown being of baked porcelain. A band of pure gold overlaid with clasp metal and the two connected with solder is adapted to the cylindrical portion of the crown, the clasp being joined to the substitute. In one case a wire is attached to the cylinder and parallel with it, which increases the stability of the clasp.

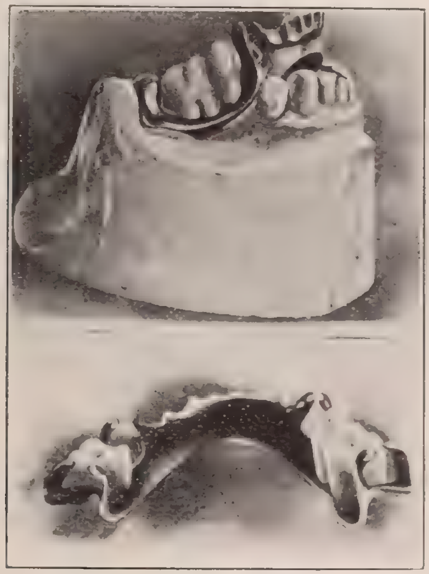


Fig. 27. Spaulding.

Fig. 27. Perpendicular clasp suggested by Dr. Spaulding, of Paris.

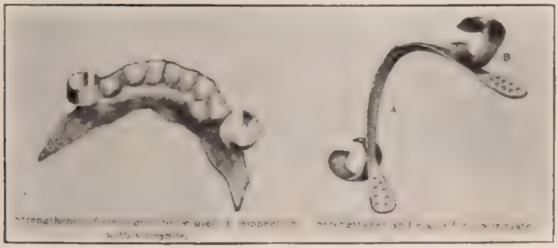


Fig. 28.

Fig. 28. Clasps attached to a metal bar or plate for imbedding in vulcanite.

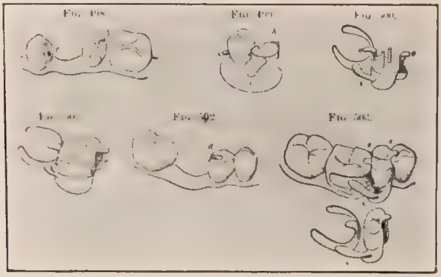


Fig. 29. Bonwill.

Fig. 29. Stop clasps for sustaining one or two teeth, suggested by Dr. Bonwill.

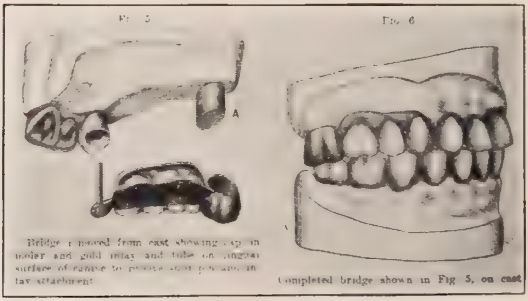


Fig. 5
Fig. 6
A
Bridge removed from cast showing cap on molar and gold inlay and tube on lingual surface of canine to receive post pin and inlay attachment
Completed bridge shown in Fig. 5, on cast

Fig. 30. Pennington.

Fig. 30. Inlay carrying root canal tube for the reception of pin attached to substitute, suggested by Dr. Pennington.

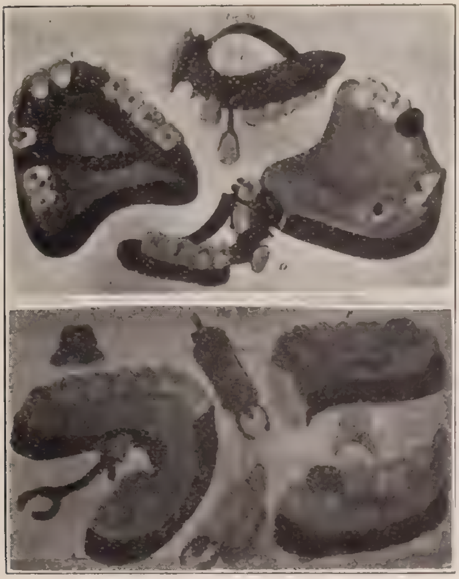


Fig. 31. Muller.

Fig. 31. Stop clasp for molar combined with square pin for cuspid root suggested by Dr. Mueller of Zurich.

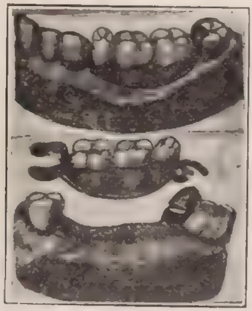


Fig. 32. Aderer.

Fig. 32. Clasp for cuspid crown retained in place by a bar extension which is received in a horizontal groove on the lingual surface of the crown or in an inlay or filling, suggested by Julius Aderer.

Fig. 33. A grooved saddle denture retained by clasps and perpendicular guides, suggested by Dr. Van Fossume. *(Dental Cosmos.)*

While none of the appliances illustrated are universal in application, and in some cases not one might prove serviceable, yet the efforts in this field are certainly worthy of commendation and without doubt indicate progress rather than retrogression.

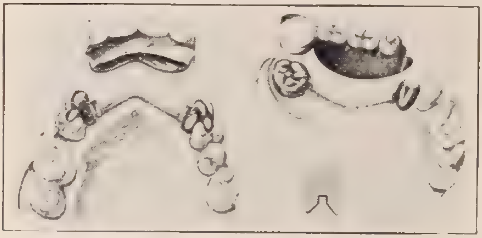


Fig. 33. Van Fossume.

The object in presenting this paper is to give a bird's-eye view, so to speak, of the work already accomplished, with the hope of stimulating further development in this field. Many phases of this subject deserve serious consideration, as for instance, the amount of stress substitutes of a given type will be subjected to in masticatory effort, the character of the alloy used in the construction of the attachments, and a careful study of the size and proportions of such appliances necessary to resist the ever-present and persistent stress.

A STUDY OF THE TREATMENT OF PULPLESS TEETH.*

BY WM. HIRSCHFELD, D. D. S., PARIS, FRANCE.

The art of saving pulpless teeth and making them serviceable for an unlimited time occupies such an important place in modern dentistry, that it rightly deserves to be brought up for discussion in professional meetings from time to time. Out of empirical beginnings it has worked its way slowly up to what it is at present and if without doubt, the last word in this line has not been said, if there are questions which still need to be solved, the fact remains that we have such methods, such medical or chemical agents at our command, as to overcome with their help, almost any complication. We must admit even that within the last ten years so many new methods have come up that a confusion in regard to their suitable employment is nothing to be astonished at. It may therefore be of interest even to you, the long experienced practitioners, to select through this study those methods or drugs which in their *ensemble* may form a rational treatment of pulpless teeth.

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*Read before the American Dental Society of Europe, London, July 31, 1908.

To comprehend clearly the object of this operation, let us find out first what Nature demands from us to tolerate a pulpless tooth in the mouth. This may be expressed in a few words:

To do away absolutely with anything liable to create infection in the immediate neighborhood of the tooth, or in other words, to keep up a constant aseptic condition of the pericementum.

We can accomplish this under two conditions:

First: By the removal of the cause of infection, which means here the remnants of a dead pulp.

Second: By the hermetic sealing of the door open to aseptic infiltration, namely the foramen of the root.

Before commencing the treatment of a pulpless tooth we have first to examine the actual state of the pulp, and our diagnosis will enable us to make a distinct difference between two classes of diseased teeth:

1. Teeth devitalized purposely, or teeth taken before decomposition of the pulp mass has set in.

2. Teeth where the pulp has undergone putrefaction through an accidental cause.

While the final treatment, the filling of the root, of both these classes of teeth will be the same, the preparatory part, the removal of the pulp, will be somewhat different. The more care we devote to this part of the work, the surer we can be in our prognosis in regard to permanent success, and I feel like placing at the beginning of this chapter a sentence of the late Professor Miller (1) who expressed himself in an article on this subject as follows: "In attempting to assign the success or failure of the operations upon diseased teeth to their proper causes, factors of the greatest importance are frequently left out of account and the results ascribed to some agent which may have been entirely different; one of these

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1—All names and quotations refer to the *Dental Cosmos* from 1882 to 1908.

factors which forms the very foundation of successful root-treatment is the manner in which the mechanical cleansing of the canal is carried out."

This mechanical cleansing which Professor Miller laid so much stress on regards altogether the removal of the entire pulp following devitalization which should not present any great difficulty to any operator. Get a free or rather straight access to every canal entrance and with the help of Donaldson broaches, No. 5 (fine and extra fine), the extraction of the pulp may be successfully performed. However, it must be admitted that in narrow roots, this is not altogether easy. The buccal roots of upper molars, the two extreme ends of the bicuspids, the anterior roots of lower molars are generally so fine and above all curved at the end that the tiniest broach will not penetrate to the very apex. Even the most careful operator cannot say with certainty that every particle of pulp has been removed from these narrow canals. To overcome this difficulty the profession has adopted different methods which, however, will not always be accepted by Nature.

The most frequently suggested idea for the removal of tiny pulp-ends is to enlarge narrow canals by drills.

Now, gentlemen, if you reflect for a moment over the consequences of such a procedure, you would certainly condemn forever the use of a drill in a root canal. To enlarge a root you have to cut away from the dentin. These tiny shavings are supposed to be removed entirely by the frequent withdrawal of the drill, the chip blower or the syringe. Now, can you maintain that you really remove every bit of this debris? Is it not sure and certain that fragments of dentin, no matter how fine will be crowded against the foramen and create there a source of infection? Is there any means to assure the operator beforehand that his drill will go straight to the apex and not leave untouched the curved end of a root?

How inappropriate the idea of enlarging root-canals is, shows already our view on preparing them for pivoting. Any dentist would consider as criminal to commence the enlarging of a canal before having closed the foramen either by gold, tin, cement or gutta percha. Now, why should there be a difference between the procedure with a narrow root and the preparation of an incisor for pivoting? For all these reasons drilling into a narrow root-canal should be discarded as malpractice, although practitioners of good standing, like Dr. George Evans, Hofheinz and others claim good results with it.

Dr. Hofheinz (1892) advises the enlargement of roots for another reason. According to his opinion, the tubuli of the canal are infected by the dead pulp and should for this reason if no other be cut away.

This theory is not admitted by Professor Miller. In a special article on the decomposition of the contents of dentinal tubuli (1890) he proves that such an infection—if actually existing—will never be of any clinical harm, provided the pulp be entirely removed. In this paper Professor Miller quotes Dr. Jenkins' view on this matter, who says: "It is my conviction that no inflammation of the pericementum takes place when the pulp has been thoroughly extirpated and the canal, pulp-chamber and crown cavity properly filled. I have never known a case where there was any reason to suspect pericemental inflammation to be caused by the decomposition of the contents of dentinal tubuli. The inflammation could always more reasonably be accounted for, it invariably seeming to be the result of defective manipulation or of pre-existing necrosis." Personally, I must strongly endorse the opinion of these eminent men, as I have never found an abscess following the treatment of a putrid pulp owing to the non-cutting away of the infected dentin. But I have seen frequently fistulae as sequel of enlarged canals and have abandoned the method as positively unsafe. But what are we to do with these troublesome roots?

Are we to follow the advice of Dr. Schields, after whose idea the perfect removal of the pulp-mass should always be performed, no matter if you spend one hour or more over one single root? (1893.)

Here it appears to me that we cannot do better than to adopt the process of mummification as advocated first by Dr. Söderberg of Sydney (Australia) (1895). His idea is to remove as much as possible of the pulp-tissue and what is left near the apex bring it in contact with a chemical capable of preventing the development of pathological agents. This he has found in a paste containing alum-thymol, glycerol mixed with zinc-oxid. A few years later, this material was improved by the introduction of formaldehyde to increase by it the hardening power of the paste.

Personal experience permits me to say that now-a-days such formaline-pastes will positively prevent putrescence of pulp-filaments, as long as we limit its employment to those tiny fragments which we cannot get hold of. To extend the mummifying process over partial or entire pulps which is frequently done under the scientific name of amputation of the pulp must be considered as a professional fault, inasmuch as permanent success with this method is—saying the least—doubtful. As a rule, Nature will not tolerate large pulp-remnants and disposes of them simply as foreign elements to be eliminated by the usual formation of abscesses.

To leave these pulp-remains simply alone without filling the canal is another largely adopted theory. Dr. Blackstone (1890) after years of successful experience advocates warmly this method and you are probably all of his opinion that Nature will assist us if we give it a fair chance instead of trying to crowd some gutta-percha on top of these pulp-endings, embeded in tortuous root-canals.

The pulp once completely done away with, the hemorrhage following its extraction, if there is any, should be checked by simple means, mostly by cotton and alcohol. The use of an antiseptic to assist the healing of the wound is not indicated in front teeth, as the free use of carbolic acid, oil of cloves, and above all of iodoform, is liable to discolor the teeth. To avoid this unnecessary complication the action of an antiseptic can be replaced by a far more powerful agent, by heat.

Heating or even over-heating of an empty root-canal should be the next step previous to the filling. The idea of using heat is not new by any means. In reading up articles on root-filling, I have found an excellent paper of Dr. Redfuss (1891), who says: "The thorough drying of the root-canals is one of the most important principles in their treatment because moisture is a factor in the product of germs and putrefactive processes." Dr. George Evans (1893) is of the same opinion and recommends the use of the electric root-dryer. To increase still more the action of heat, it is well to flood the root-canal with pure alcohol and then heat it thoroughly with a fine copper-point brought to red heat by electricity or (if you have none at your disposal) by heating it over an alcohol flame. The intense heating of the canal will at the same time facilitate the intimate adherence of the filling material to the walls of the dentin.

The question, concerning the most suitable root-filling which we have to consider now, has induced a good many writers to publish special articles during the past thirty years and in each a different material is advised. This vast divergency of opinions can be considered as the result of the erroneous but for a long time accepted theory that the welfare of a pulpless tooth depends on a curative action of the material in the canal. This—to a certain degree—may be the case with teeth having their foramen enlarged through pathological processes, but with a normal healthy root, entirely free from pulp tissue, I can only agree with Professor Sachs of Berlin, when he says in his book on filling teeth: "It matters not so much what you put in to a root-canal as what you take out of it." Indeed, the kind of filling employed is of but little importance provided it is non-irritant, of easy manipulation and impermeable to moisture. These qualities a great number of materials possess, more or less, and if their advocates have all been successful with them, their success hinges perhaps more upon the skill of the operator than the quality of the filling used. Going through the literature on this subject, I have found in the *Dental Cosmos* of 1890 an excellent paper of Dr. Faught of Philadelphia. This author, by that time had studied up eighty different writers on root-filling in their articles published from 1874-1888. Their advice is the following: Twenty-one are for oxychlorid of zinc, 16 for gold and gutta-percha, 11 for medicated cotton, 6 for wood, 3 for oxyphosphate of zinc, 1 for shellac, 1 for lead, 1 for leaving the canals unfilled.

Dr. J. L. Williams, in the discussion following this paper recommends a very sensible system. He uses tiny rods of lead, zinc, tin or copper, coats them with oxid of zinc, allowing the end of these points to reach into the cavity and thus form a retainer for the filling. Dr. Arrington and Dr. Gramme are convinced defenders of beeswax and their view merits a special mention. Although I have never tried their method I can easily understand that a point of beeswax melted inside the canal through locally applied heat can readily penetrate into the finest parts of the foramen and form an excellent sealing there. Dr. Redfuss, in speaking of heat, recommends also beeswax, which he uses at the same time as a vehicle for an antiseptic, mixed right into it.

Following Dr. Faught's example, I have consulted the opinion of the numerous essayists from 1890 to the present time. The majority advocate the use of white gutta-percha. Nevertheless, a short note published by Dr. Jenkins in 1903 on the best root-canal filling may impress you as much as it did me. Dr. Jenkins said: "After thirty years of successful experience, that a tooth brought into a healthy condition, having its root perfectly filled with zinc-oxychlorid, retains its color and its health and is absolutely destitute of the faintest odor if you cut it open twenty-five years afterwards."

Dr. George Evans (1903) is also more in favor of cement, as he thinks that gutta-percha is not as reliable to close heremetically the orifice as cement. His idea is that it does not matter so much for a root-filling to shut the foramen as to be impermeable to moisture coming through the tooth. He holds that in large amalgam fillings, for instance, through the shrinkage, moisture which penetrates will not do any harm to the teeth if the roots are filled solidly with cement or metal. But that he cannot say the same of gutta-percha sealings, which he considers as ready to allow infiltration through the canal. Notwithstanding the opinion of these authorities I can only declare that after twenty years of personal experience, gutta-percha, reasonably employed, appears to me as perfect a root-filling as we can possibly expect. It is of easy manipulation, therefore ready to penetrate to the fine end of the foramen; it is non-destructible, thus absolutely hindering moisture from entering. It is, as Dr. Barrett says, a neutral material; that is to say, not irritating to the neighborhood of the apex. Of course, red gutta should be avoided as it discolors the tooth; white gutta, on the contrary, helps to maintain the color. The best way to employ it is to use it previously dipped in liquid chloro-percha. In place of it, eucalyptol was recommended to me only lately as being of greater advantage, as this remedy, aside from its antiseptic properties, brings the gutta-percha point to a more intimate adherence of the dentin than chloro-percha, which, after the evaporation of the chloroform, is apt to leave an empty space around the point.

It is for this same reason that a number of operators first line the canal with thin cement and finish up with a gutta-percha point pushed into it and allow to harden with it.

The principal objection against this idea is that possible pressure produced by the gutta-percha may not be as readily done away with as with the chloroform, which instantly softens the end of the gutta-percha near the apex. This question of pressure on the foramen has to be taken into special consideration in regard to immediate root-filling.

As a rule a filling pressed right away into an absolutely empty canal will never do any harm, but forced against remnants of the pulp we may have pathological symptoms follow our operations. It is on this account that after the extraction of pulps under local anesthesia immediate root-filling should be avoided, as the momentary absence of sensitiveness might possibly induce you to believe that every particle of pulp is gone, which to be certain of you can only know at a subsequent sitting.

Another reason against immediate root-filling is the idea to give nature a rest after even the slightest irritation of the periosteum following the application of arsenic. And finally abundant hemorrhage may oblige us to wait before definite filling. We cannot always check bleeding at once and from twenty-four to forty-eight hours' interval is sometimes insufficient to touch the foramen without setting the pulp-end to bleed again.

All these arguments are perfectly good. All the same, long experience has proved that as a general rule, immediate filling of a healthy root will not produce any further complication.

In conclusion we can resume the different phases of treating purposely devitalized teeth as follows:

Removal of the entire pulp in normal roots;

Application of heat as germicide;

Filling of the canal with white gutta-percha;

Remnants of the pulp in tortuous narrow roots should be either left alone or mummified by the application of formalin paste.

The conditions are different where actual decomposition has followed the death of the pulp, as then its mass is changed into an altogether new body.

A devitalized pulp remains, at least for a certain period, perfectly harmless. In this state it simply needs to be extirpated within given limits of time, while a putrescent pulp forms through the influence of micro-organism a new body, always ready to extend infection to its immediate surrounding. It is thus perfectly comprehensible that the removal of a putrescent pulp demands from us precautions which the simply devitalized pulp does not require. Although it may sound somewhat paradoxical, one must admit that the treatment of an infected pulp is perhaps a more delicate and complicated operation than the healing of a tooth with a blind or an open abscess. In these cases the harm is done, while with the others, pathological consequences can be brought on through our manipulation.

The desire to remove putrescent pulps with less danger for the pericementum has therefore been the preoccupation of many investigators who tried to solve the following problem: To change through the influence of some chemical the entire composition of a decomposed pulp into a perfectly innocuous body. Inasmuch as the solution of this problem is altogether a scientific one, it is fair to suppose that only such men have arrived at positive results who have studied systematically the pathology of the pulp in its different stages of decay.

The first dentist who, to my knowledge, has opened the door to a regular scientific treatment was Dr. Schreier of Vienna, who, in 1893, presented to the profession his well known method of mixing the infected pulp-débris with sodium and potassium, forming through this union a new body alike in its ingredients to soap.

A few years later, in 1897, Dr. Weld presented another system of making aseptic the putrescent contents of the root-canal under the name of the chemico-metallic method. It consists in the introduction in the root of a zinc-point alloyed with silver and the application of a drop of modified nitro-hydro chloric acid. Through the union of these elements the root-canal is chemically disinfected and an oxid formed which involves the metal and serves as a permanent root-filling and sterilizer.

Dr. P. Jones, who read a paper on this treatment in 1903, praises it as especially suitable for tortuous and putrescent roots. If we can take the success of this method as granted, may I venture as a personal suggestion to extend it on broaches accidentally broken in root-canals? These little mishaps which can occur to the best operator may find a good solution with Dr. Weld's theory: Why not try to render these broach-ends harmless by uniting them with a chemical ready to neutralize the bad effect of the action of steel on decomposed pulp-remnants? Practitioners, especially those familiar with the laws of physiology and chemistry, will possibly attain a good result concerning this problem. At any rate we are greatly indebted to Dr. Weld and his name deserves to be mentioned with those of Heizmann, Redfuss, Kirk, Harlan, Guilford, Boedecker, Miller, Black, Williams, Frey, Choquet, A. Witzel, and others who, through their serious scientific investigations, have helped to advance the cure of diseased pulps during the past twenty-five years.

The uncertainty in regard to the treatment of infected pulps was brought suddenly to an end by the revelation of Dr. Buckley of Chicago, whose discoveries on the employment of tricresol-formalin for putrescent pulps may be safely accepted as a positive solution of the question. As this remedy has become of current use in our daily practice, as probably you all have read the articles published by Dr. Buckley on this line since the International Congress of St. Louis, it may seem superfluous to explain this method in its details. Suffice to say, that his patient and minute researches have thrown such a brilliant light on the different phases of decomposition of the pulp that the employment of tricresol for changing the dangerous character of dead pulp-residue appears today as a perfectly natural operation.

But still, this study would be incomplete if the different stages of pulp-decomposition, with their sequels, should not be at least mentioned. Allow me then to consider them briefly in their principal features.

1. The pulp is simply decomposed without pain.

Application of Buckley's remedy, sealed hermetically in the tooth, and left in for twenty-four hours. The second day only removal of the pulp with broaches, dipped frequently in formalin and other application of the mixture for a day. If there is no sensitiveness and no bad odor by that time, the tooth can be filled definitely.

2. The decomposition of the pulp has produced suppuration, which oozes out of the canal on pressure, in fact, what is known as "blind abscess."

Here he advises removal of the pus as far as possible by pressure on the gums; then a dressing of the preparation hermetically sealed in for a day. This, repeated for two or three times, will bring the suppuration to an end. If finally the pus changes into a clear serum, this is best dried up as much as possible and definite filling without fear of future trouble proceeded to at once.

3. Putrescent pulp with fistulas.

Here first clear out the fistulous opening as far as feasible and then force a diluted preparation of Buckley's liquid through the tooth. Cauterize the fistulous canal through the gums by a strong solution of an equal mixture of carbolic and sulphuric acid. Seal hermetically into the root a formalin dressing. After twenty-four hours the pus-formation will cease and granulation be formed which definitely closes up the fistulous opening.

With these short indications, the experienced dentist is bound to meet all possible cases of putrescent pulp and there would be nothing left to add if these pathological processes would not produce very often a consequence known as open or enlarged foramen, requiring a special treatment.

The foramen of a healthy root is generally so fine that our filling-materials, like cements or gutta, will not penetrate through it. But after abscesses we find this opening sometimes so much enlarged that a broach will readily pass. If that is the case, the fine ending of a gutta point may possibly be pushed beyond the root and create irritation. This consideration has led the way to find a material as a root-filling which, even in contact with the periosteum or the alveolus, will not act as an irritant, but, on the contrary, develop a healing action. These properties we find particularly existing with lead. The well known fact that bullets may remain any length of time in the human body without creating noticeable disturbances has induced dentists to employ lead in a similar way.

I cannot trace the first discoverer of this method, but in 1890 Dr. N. Kingsley said to have used lead points as a root filling for the last thirty years. Among modern writers, Dr. John Spaulding has presented at Basle (1904) further details on lead-points which he advised for any lesion involving the inside of the root.

More recently, Dr. Frank Day's successful experiments have not only confirmed Dr. Spaulding's views, but have opened yet a wider field for the use of lead. For similar reasons tin foil is recommended frequently to close up enlarged foramina. A very good article on this subject was published by Dr. Storer How in 1883, speaking of tinfoil as particularly advantageous for filling the root prior to pivoting. He prefers it to gold for its healing properties. At any rate, gold as a filling for root-canals can be safely regarded as a thing of the past. Even the best made gold root-filling will not form as sure a protection against moisture as a correctly inserted cement or gutta-percha filling. Besides, it must be remembered that gold, driven accidentally beyond the apex, will not easily be tolerated by nature; it will surely give rise to abscesses and finally cause the loss of the tooth, not saying anything of the difficulty to remove it in case of pericementitis.

Gentlemen, these are the essential principles which our knowledge to save pulpless teeth is built on. Are they powerful enough to enable us to keep such teeth for any length of time? This question cannot be answered positively. Teeth which are treated in a faultless manner, which are absolutely bare of any pulp-fragments, which are hermetically sealed at the apex, even they may after years and years of comfort give rise to trouble. They may not cause swelling of the gums or abscesses, but they can become the seat of that dreaded complication known as neuralgic pain.

Once in a while patients will consult us, sent by their doctor, or some aurist, or oculist, complaining of periodically returning facial sufferings, lasting from one hour to several days. On examination we may be entirely at a loss to find the origin of that pain; there may be no hypogingival decay, no redness or swelling of the gums which leads us to trace the seat of the evil, and still the neuralgia (excepting with abnormally placed third molars) may be caused by a pulpless tooth, showing no evidence of defective treatment whatsoever. As far as I can tell by experience, the upper bicuspids are mostly the originators of such trouble and this is quite comprehensible when you think of their close relation to the lowest part of the antrum, so easily affected by a pulpless root. In opening these teeth, we may find the roots correctly filled, showing no pus at the apex, and still the pain will cease at once, owing probably to the escape of gas formed at the end of the root. Such teeth can be brought back to comfort by a new treatment followed by the usual sealing of the root. In other cases the pulpless bicuspid may have affected the antrum and brought on suppuration. To be sure of the existence of pus near or inside the antrum a very simple means consists in a careful transillumination of the mouth with a tiny electric lamp 2; if (after previous shutting away of the daylight) the red translucency of the cheek shows a dark spot near the region of the suspected bicuspid or cuspid, you can diagnose with certainty the presence of pus or of some abnormal growth necessitating the immediate opening of the antrum. These cases are not favorable. Although the pus may be evacuated through the root, a definitive healing without extraction of the tooth is not always sure. Even after sacrificing the tooth a return to health may be long in coming, and only after careful treatment with syringe and drainage.

2—Suggested by an Oculist of the New York Hospital.

How can we account for these failures of a root-treatment which we positively know to have been performed without neglecting a single detail?

It simply proves that there is somewhere in our science on root-treatment a weak point, and this may be safely attributed to the peculiar fact that this special work is performed in darkness.

The surgeon, the oculist, the aurist, all have a perfect right to say: "Our operation will be a positive success, inasmuch as we have seen with our eyes what our instrument has done." We dentists are not in the same good position. Have we not to replace our eyes by the touch to find out the condition of the operating field after an extraction of the pulp?

Can we ever get a clear view of the apex and its surroundings after the presumed cure of an open or blind abscess?

Do we see the exact point which our root-filling penetrates to?

This paper has not dealt on the resection of the apex, as Professor Partsh of Breslau advocates it for desperate cases of fistulas; but does this operation not seem to point out to us the necessity of perceiving with our eyes what our instrument is supposed to perform inside the canal? As long as we have to treat roots by (if you like) scientific guesswork, which means to rely on probes, on external symptoms, on past experience alone, just so long will nature keep the upper hand over us; we will be able to assure comfort to a pulpless tooth for a period of 10, 15, 20 years and more; we will have it in our control to restore health to a pulpless tooth, which nature tries to eliminate, but our present views on root-treatment do not allow us to say to our patient: Your tooth is safe for the rest of your life! However, this statement has nothing discouraging for us. You have seen in this study that our present knowledge of curing diseased teeth has been built up only little by little, that every detail of this intersecting branch of dentistry has been gained through the untiring efforts of eminent men. To discover new points these investigations had to go practically over much trodden ground, and if you reproach this paper for having done likewise, allow me to say to you, gentlemen, it is the only path which leads to improvement, which brings on final perfection.

A DENTAL CONTRIBUTION TO PREVENTIVE MEDICINE.*

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What has been the history of preventive medicine? It had its distant dawn in the hygienic measures of Egypt, Greece and Rome, in the elaborate Mosaic law and in the teachings of Mahomet; but its true mission has been clear only to the vision of the modern scientist. Jenner's immortal discovery, announced in 1798, was the first great light, which came, indeed, to a reluctant and unbelieving generation, whose deadly lack of scientific intelligence has survived in some examples to this very day. It was reflected from the brilliant mind of Bichat, who first taught, in 1801, that the origin of disease was not to be found in the organs themselves, but in the tissues of which they are composed, a thought which caused a revolution in the consideration of pathological changes.

From the beginning of the nineteenth century to its close, progress was made which put to shame the whole previous system of medicine. Experimental investigation opened up new lines of thought. Dentistry and other specialties were born and flourished. Anesthesia was discovered. Lister opened the way to aseptic surgery. The century which began in a maze of political turmoil, elaborate systems of philosophy, of dogmatic theology, of splendid examples of romance and poetry for the educated few, ended in triumphs of the scientific spirit for the benefit and lasting blessing of the many, before which imagination stands abashed.

Let us recount some of the steps which have led to the position which preventive medicine occupies today. I need not mention the circumstances which brought about sounder methods of education, nor that increasing emancipation of mind which marked the progress of the last century, but will simply refer to the tremendous importance of the rise of the new science of bacteriology, upon which is founded that which is most vital in modern medicine.

Bacteriology was founded, and its development has been largely dependent upon, the discovery and evolution of the microscope. Luewenhoeck of Holland, "the father of microscopic anatomy," as Sir Richard Owen called him, already in 1675 first placed water beneath the microsope, and thus revealed a new and limitless world to the wondering eye of man. Just a century later, Müller, a Danish investigator, discovered and attempted to classify over three hundred micro-organisms, which he found in the waters about Copenhagen. Some of his terminology remains to this day. In 1777 the Abbé Spallanzani showed that repeated and prolonged boiling and the exclusion of air would entirely prevent putrefactive changes in such substances as meat broth, but still nearly a century elapsed before it was demonstrated that all putrefaction is due to the action of bacteria. The discoveries of Pasteur, Koch and others completely overthrew the theory of spontaneous generation and proved that life comes from life. Such a simple matter as the introduction of the sterilized cotton-wool plug, by Schröder & Dusch, in 1854, had a great influence upon the development of bacteriology, and when, in 1863, Davaine proved the pathogenic nature of the bacillus of anthrax, the door was opened to that realm wherein the terrible diseases which have so long oppressed the bodies and tortured the souls of men, are being rapidly deprived of their power to harass and to destroy.

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*Read before the American Dental Society of Europe, London, 1908.

Consider the list of some of these great triumphs. Smallpox, anthrax, typhus fever, leprosy, typhoid fever, tuberculosis, dental caries, hydrophobia, puerperal fever, cholera, diphtheria, influenza, tetanus, pneumonia, bubonic plague, malaria, yellow fever, serpent poisoning, syphilis, sleeping sickness—in all of which the distinctive pathogenic germ has been discovered, or the way shown to prevent contagion, to provide a cure, or to greatly reduce suffering and mortality.

Amid this splendid progress Dentistry takes its legitimate position. Ranging with ophthalmology and gynecology, as among the latest born of medical specialties, its earlier development was largely mechanical, but it quickly felt the influence of the great wave which shortly after the middle of the nineteenth century, began to sweep around the world. In every civilized country it came to be placed upon a true scientific foundation, until now even the imperfectly instructed or the least gifted practitioner has some sense of the importance of his work. Ever since the memorable discoveries of Miller, biological and chemical investigation has been greatly stimulated, and surgical and mechanical improvement have not lagged behind. In one sense, the daily occupation of the dental practitioner is distinctively in the line of preventive medicine. Whether filling a simple cavity in a tooth, or making the Brophy operation for cleft palate; whether giving a patient plain advice as to the care of the mouth, or working a physiological miracle in the Younger treatment for pyorrhea; whether restoring lost function with a crown, a sanitary bridge, or a plate, or bringing the hideous deformities caused by dental irregularity into harmonious and healthful condition through orthodontia, the dentist is always seeking not only to cure, but to prevent disaster and disease. In these days, also, his thoughts and energies are directed not only to the ills of those who come under his own care, but likewise to the great army of the helpless and the poor, who suffer so seriously and so needlessly from dental diseases and their consequences. Free clinics, sustained by private or municipal charity, are constantly increasing. The inspection and treatment of the teeth of school children, of soldiers, and of inmates of asylums and hospitals assume always greater dimensions, as does the dissemination of popular knowledge of dental diseases and their treatment, a class of diseases from which mankind suffers more generally than from any other; perhaps more than from all others combined.

Striking evidence of this widening interest is found in modern dental literature. It is replete with articles upon oral hygiene, showing its local and general importance. Even in general medicine, but particularly in the specialties of rhinology and laryngology, the necessity of securing an aseptic condition of the mouth has become evident. The time is therefore ripe for the modest work in which I have been engaged during the past year, the results of which I now beg to lay it before you.

The last visit paid to me by the lamented Miller was just as he had completed the experiments which gave rise to his memorable article on the Wasting of Tooth Tissue, published in the *Dental Cosmos* in January, February and March, 1907. We went over the whole subject together and I found that, he by experiment and I by many years of writing prescriptions for tooth powders and antiseptic washes and watching their effect, had come to the same conclusion. We were both convinced that every form of grit must be excluded from any preparation designed for cleansing the teeth, and that liquid antiseptic washes were generally of doubtful or insignificant utility.

For months I brooded over the question, slowly emancipating myself from the trammels of habits of thought, such as the supposed necessity of decided astringent and antacid quality and a bias in favor of such antiseptics as are used in surgery. The problem of cleansing the teeth was comparatively simple. The two indispensable ingredients were precipitated chalk and soap. But soap as understood by the ordinary manufacturer was unsuitable; it was necessary to find a soap which would not only act as a lubricant, but should also have a high solvent power for fat, which should be compatible with disinfectants and serve as a medium for binding them together, and which was in itself sterile. It had to be expressly manufactured for this purpose.

Given the cleansing efficacy of precipitated chalk and soap, it was necessary to prove their non-abrasive action. This was done by repeating the Miller experiments and demonstrating that brushing with water or saliva, using chalk and soap combined, or using the finally completed product, would simply polish, and not abrade, tooth tissue.

In approaching the question of destroying the micro-organisms, which breed so abundantly in the mouth, and inhibiting their activity for a time, I found the teachings of aseptic surgery of great value. The surgeon accomplishes practical sterilization by three methods: I. Mechanical; II, Physical, through heat; III. Chemical. Of these the two former are to him the most efficient. The analogy between procedure for a surgical operation and securing an aseptic condition in the mouth is evident. The brushing and cleansing of the surface of the skin, before the final chemical disinfection, is represented by the friction of the toothbrush. The sterilization of instruments by heat is a method frequently necessary for the toothbrush, especially in cases of tuberculosis, diphtheria, influenza, syphilis, etc. The removal of grease and other organic matter with ether or turpentine may be paralleled in the mouth by the use of soap and alcohol. But, except in the mouth, chemical disinfection of wounds, from which so much was at first expected, has fallen into disrepute, as has also the administration of disinfectants by the mouth medicinally, such as creosote, phenol, salicylic acid, etc., in enteric fever, gastro-intestinal and other disorders. This is partly because there is as yet no established theory of chemical disinfection to connect a great mass of empirical facts, partly because of the frequently depressing effect of such agents upon the resistant power of the tissues, and partly because it has been found that the value of a disinfectant depends upon its power to penetrate the bacterial cell, a power not easily exercised in a surgical wound.

The resistance of micro-organisms to disinfectants varies greatly not only in different species, but in the same species under different conditions. Indeed, there are so great a number of modifying and perplexing conditions surrounding this question, that they cannot even be referred to in the space of this article.

I will not weary you by recounting the long process by which I came to the final selection of the disinfectants. By disinfectants is meant, that which is not only antiseptic, but also germicidal and inhibital to the growth of bacteria, nearly all antiseptics being germicides or disinfectants in a diluted state. I will simply mention those which I adopted: Benzoic Acid, Eucalyptus Oil, Oil of Peppermint, Thymol, Saccharine, Alcohol and Glycerin. The proportions were:

Soap	33.00
Precipitated Chalk	25.00
Absolute Alcohol	20.00
Glycerin	15.00
Benzoic Acid	3.00
Eucalyptus Oil	2.00
Oil of Peppermint	2.00
Saccharin	.50
Thymol	.25

You will observe that each of these ingredients, except chalk, has a distinct antiseptic or disinfectant value, but it was in their combination that I found disinfectant power such as I had hoped for, but, until my experiments were ended, had scarcely dared to anticipate. In such combination, none of them are injurious to the oral tissues. Your suspicions might be excited by the important observations of Cook upon pathological changes of mucous tissue caused by soap, benzoic acid and thymol; but these changes do not occur when such agents are used in appropriate combination with alcohol. With the properties of eucalyptus and peppermint oil you are well acquainted, but, in spite of Miller's favorable experiments with saccharin, its use seems hitherto not highly regarded. I have, however, found it indispensable, especially for its rapid and long continued disinfectant influence.

Glycerin possesses such antiseptic qualities that it has been successfully used to preserve marrows for inoculation against rabies, when being sent from France to other countries.

My final experiments were carried out in the chemical laboratory at Yale and, so soon as the product was finished, it was placed in the hands of Dr. Leo F. Rettger, assistant professor of bacteriology of the university, for examination. The three reports as yet received will appear as an appendix to this paper. By these it will be seen that both in experiments from the mouth and from individual pure cultures, it exercises a powerful disinfectant action upon the micro-organisms found in the oral cavity. Not only does it destroy, but it inhibits the growth of bacteria to such a degree that I have ventured to give it the ambitious name of Kolynos (Greek: Disease Preventer).

I know of no other combination of disinfectants which, without impairing the resistant power of tissues, accomplishes such results. Hitherto we have despaired of obtaining any other than partial and fleeting disinfection of the mouth. With Kolynos, however, the disinfectant action is not only immediately apparent, but it is continuous for a considerable time, and it is also cumulative. This is shown by bacteriological examination, which notes not only immediate reduction and retarded development, but also a diminishing number of colonies when Kolynos is used habitually.

For bacteriological investigation almost all of us must be dependent upon experts, but a little personal experience with this preparation will show how enduring are its effects, as, for instance, in the sense of cleanliness abiding until morning after it has been used at night, and in the observation of a bad case of pyorrhea. In the latter, if the preparation be used only some three days before beginning treatment, the improvement is usually most evident. Inflammation and turgidity and the flow of pus are so reduced as to make instrumentation distinctly easier both for patient and operator, and, after treatment, its use retards recurrence.

But it is in a wider aspect that Kolynos may have its effect upon preventive medicine. Simple oral disorders are rarely fatal, or even dangerous, but there are distressing and dangerous diseases which either enter the system through the mouth, or whose germs lurk within, awaiting favorable opportunity to do their office. It is generally believed that blood and all tissues, except surface tissues, are normally free from bacteria; but in the mouth, constantly, frequently or occasionally, are found such bacteria as staphylococci, streptococci, pneumococci, and the bacilli of tuberculosis, enteric fever, diphtheria, influenza, etc., with whose specific action, or with whose relations to septicemia, pyemia, tonsilitis, septic gastritis, laryngitis, etc., you are all familiar. It can but be that the habitual destruction of great quantities of these pernicious organisms, and the retarding of their development for a certain time is of value in preventing many attacks of disease, or in aiding in their treatment.

During the prevailing epidemic of influenza last winter, the persons habitually using Kolynos, so far as they came under my observation, were exempt; and in the two cases where, after the disease had been acquired, Kolynos was at once employed, the recovery was unusually rapid and favorable. It is well, in time of epidemic, not only to use this preparation thrice daily for the mouth, but also to place a small quantity at the entrance of the nostrils night and morning. Even the most volatile elements are so well held together through the process of manufacture, that the preparation retains its efficiency and keeps a sterile condition in the nasal passages for several hours. Gargling is of unquestionable value, but the liquid seldom goes beyond the base of the tongue and anterior pillars of the fauces, laryngial gargling being a rare accomplishment. Fortunately, in a normal condition, the throat and the naso-pharynx contain very few micro-organisms, but when excited by inflammatory troubles, they increase prodigiously and add greatly to the distress caused by the progress of the disease. Influenza is highly infectious. The bacillus influenza is one of the smallest of known bacilli and appears generally to be spread by the dissemination of the nasal and bronchial secretions of the sufferers. Disinfection of the mouth, nose and pharynx is here of great importance.

The same may be said of diphtheria. The Klebs-Löffler bacillus is exceedingly virulent and tenacious, and the infection is doubtless chiefly conveyed by means of the secretions. The prophylactic use of the antitoxin, although the immunity which it gives does not exceed three weeks, is, for doctors and nurses and others who are exposed to diphtheria, of great importance, but isolation and disinfection must still be chiefly relied upon to restrain contagion. Dr. Rettger's experiments relating to the disinfecting action of Kolynos upon the diphtheria bacilli are therefore of great interest.

In the most deadly of all diseases, pulmonary tuberculosis, the majority of cases come through inhalation. The sputum, which is overladen with germs, is usually discharged in great quantity. The bacilli are to be found not only in the mouth, but in the secretions from the nose, upon the moustache and beard of the patient, on his clothing and hands. Preventive medicine has already accomplished much in restraining the progress of this terrible disease and any addition to restrictive resources, however slight, is still a matter of moment.

Last of all, I will mention the manifestation of syphilis as found in the mouth, against which I hope Kolynos will prove useful. The brilliant discovery of Metchnikoff and Roux, through which it is proved that calomel ointment can prevent the onset of this disease, is of great importance to us in the treatment of syphilitic patients, by whom we are liable to be infected. But the ointment cannot be used in the mouth itself. I have reason to believe that Kolynos greatly reduces the danger from mucous patches and the saliva, and, when the experiments at present in progress are concluded, I shall return to this subject.

You will naturally ask me upon what theory I account for the action of Kolynos. Great as has been the progress in bacteriology, what remains to be learned is infinitely more than has been as yet discovered, and I only venture to suggest that, with our present knowledge, it is reasonable to believe that, in the mouth, our efforts should be largely directed to the simple destruction and inhibition of bacteria, since in these alone appears to be the source of disease. The problem of treatment is here far simpler than in surgical wounds. There chemical disinfection is useless or impracticable, for reasons aldeady given. The mouth is, however, accessible. It is bathed in saliva, lubricated by food and drink, and kept in nearly constant movement. Moreover, the tissues are resistant in a high degree. This is shown in the treatment of pyorrhea, where organic and inorganic disinfectants are used in strong solution, without dangerous loss of resistance, treatment which would be impossible elsewhere. It is a serious question, however, if we have not erred in placing such confidence in resistant power, and if we should not accomplish our purpose more perfectly by milder methods. To maintain the vitality of a tissue is as truly asepsis as to diminish the number of microbes in the point diseased. It was therefore that I turned from the irritating and destructive agents we have been so accustomed to employ and sought for those which, through adroit combination, should more gently, but far more efficiently, accomplish disinfection. The result gave a slightly alkaline, astringent and stimulating product. These qualities are doubtless of value, but these, or any other virtues which the preparation may possess, are as nothing compared to its germicidal properties. Kolynos does not cure of itself. It simply destroys dangerous organisms, prevents infection, and gives Nature a chance, by her own methods, to effect a cure. Its powerful germicidal effect is probably largely due to its solvent action on the envelopes of the bacteria. There is much dispute as to the chemical composition of these envelopes, but, whichever theory may be correct, the special soap and its allies may well be regarded as furnishing an effective solvent, which enables the germicides to do their work directly upon the germs, and certainly the chalk and soap greatly assist in washing away the destroyed microbes and their products.

The manufacturers write me (there was no course possible except to put it in the hands of a firm which could be depended upon to follow exactly the somewhat complicated methods of manufacture) that already they have been obliged to meet a demand for a liquid Kolynos, for spraying, gargling, syringing, etc., which they have supplied by furnishing it without the chalk, but retaining the soap in solution, obtaining results which, without the soap, would be improbable.

Not only are the bacteria surrounded by their double envelopes, but they are often imbedded in, or partially covered by, fat, broken down epithelium and other organic substances, which need the solvent action of soap and alcohol, that the germicides may penetrate to the inner citadel.

This preparation will therefore:

I. Cleanse and polish the surfaces of the teeth wherever it is properly applied, and give them the pleasing, natural color of true cleanliness, without the least danger of abrasion.

II. It will overcome the defenses of bacteria through solution, and destroy the life of the germs, washing them and their products away with great thoroughness and without injury to the resistant power of the tissues with which it comes in contact.

III. It will produce a condition of such cleanliness and will persist in its beneficent, sterilizing action so long as to distinctly hinder bacterial growth for a considerable time, even if fresh germs are introduced.

I trust, therefore, that your experience will add to my conviction that this is a dental contribution to preventive medicine of local and general value.

The following reports on "Investigation of the Disinfectant Action of Kolynos" were put in by Dr. Jenkins as appendices to his paper:

BACTERIOLOGICAL REPORTS ON KOLYNOS.

BY DR. LEO. F. RETTGER, ASSISTANT PROFESSOR OF BACTERIOLOGY, YALE UNIVERSITY.

Investigation of the Cleansing and Antiseptic Properties of Dr. Jenkins' Tooth Cream Kolynos.

I. CLEANSING POWER.

Determination of comparative numbers of bacteria from the mouth, before and after brushing with Kolynos.

EXPERIMENT 1.

One minute's brushing of teeth with soft brush and a little water after breakfast. No previous brushing on that day. The saliva-saturated brush washed out in 100 cc. of sterile water and agar plates poured. For this purpose one-half cubic centimeter of the suspension was introduced into a second 100 cc. of water and of this dilution 0.2 cc. were poured in each of the two Petri dishes, and 0.5 cc. in a third. The teeth were next brushed thoroughly for two minutes with Kolynos. Following this, the bacteria were again estimated in the same manner as before the application of the paste.

		Reduction
A (Before cleansing)	25.5 colonies per sq. cm.	
B (30 min. after cleasing)	5 colonies per sq. cm.	80.4%
C (60 min. after cleansing)	4 colonies per sq. cm.	84%

EXPERIMENT 2.

		Reduction
A (Before cleansing)	20 colonies per sq. cm.	
B (30 min. after cleansing)	2.15 colonies per sq. cm.	89.3%
C (60 min. after cleansing)	2.2 colonies per sq. cm.	89%
D (1½ hrs. after cleansing)	3.4 colonies per sq. cm.	83%
E (2 hrs. after cleansing)	3 colonies per sq. cm.	85%
F (3 hrs. after cleansing)	3.4 colonies per sq. cm.	83%

Note: The brushings here with plain brush and water before each determination must be taken into account, as a considerable number of bacteria are removed in this way.

EXPERIMENT 3.

Method slightly different from that in experiments 1 and 2. Mouth rinsed for two minutes with water, before brushing with the paste, until 100 cc. fluid were collected in a bottle. Teeth then cleansed for two minutes with brush and paste. Following this mouth rinsed as before the brushing. Comparative numbers of the bacteria before and after the cleansing determined.

		Reduction
A (Before cleansing)	51.5 colonies per sq. cm.	
B (30 min. after cleansing)	6 colonies per sq. cm.	88.5%
C (1½ hrs. after cleansing)	15 colonies per sq. cm.	71%
D (2½ hrs. after cleansing)	23.7 colonies per sq. cm.	54%

EXPERIMENT 4. CHECK EXPERIMENT.

Same as experiment 3, but instead of cleansing with brush and paste, use brush and water only.

		Reduction
A (Before cleansing)	42 colonies per sq. cm.	
B (30 min. after cleansing)	36 colonies per sq. cm.	14.3%

EXPERIMENT 5. CHECK EXPERIMENT.

		Reduction
A (Before cleansing)	64 colonies per sq. cm.	
B (10 min. after cleansing)	46 colonies per sq. cm.	28%
C (2 hrs. after cleansing)	46 colonies per sq. cm.	28%

PYORRHEA CASES. EXPERIMENT 6 AND 7.

		Reduction
Case 1		
A (Before cleansing)	83 colonies per sq. cm.	
B (After cleansing)	3.35 colonies per sq. cm.	96%
Case 2		Reduction
A (Before cleansing)	46 colonies per sq. cm.	
B (After cleansing)	3.6 colonies per sq. cm.	92%

An examination was made of the saliva of Case 2 before and after the brushing with the paste, in order to determine if possible what particular kinds of bacteria suffered the greatest reduction in numbers by the application of the paste. For this purpose the saliva was allowed to stand in a cone tumbler, so as to obtain an abundant sediment of bacteria. This sediment was stained on a slide by the Gram staining method (contrast stain) and studied with the aid of a microscope. Such examination showed that while a certain diplobacillus which occurred abundantly on the epithelial cells, in particular, showed quite a reduction in numbers, by far the greatest reduction occurred in the micrococci (mostly staphylococci) with some diplococci. In fact there were comparatively very few of these cocci to be seen in the saliva that was obtained after the application of the tooth paste. The bulk of the staphylococci in saliva A had all the appearance of the ordinary pus staphylococci. Examination of the different sets of the agar plates fully corroborate these results.

II. ANTISEPTIC PROPERTIES.

A series of experiments made in ordinary beef bouillon, in large test tubes. After inoculation of the bouillon with one of the common pus organisms (Staphylococcus pyogenes and Streptococcus pyogenes) measured quantities of a 10 per cent emulsion of the paste were added. The tubes were then kept at 37-38 degrees C.

Searching microscopic examinations were made after 18-24 hours. Tubes were frequently shaken during the incubation. The different lots of tubes contained different amounts of the paste emulsion. Kolynos had a decided inhibitory action on both of the pus organisms in the strength of 0.25 per cent, 0.5 per cent. The inhibitory action was complete in the strength of 0.5 per cent, 1.0 per cent. During much shorter exposure, when the conditions are such that the volatile parts of the paste are prevented from escaping (by means of rubber caps on the mouths of the tubes, etc.) the efficiency of the paste is increased and 0.25 per cent will easily hold back the bacteria to a very marked degre, while 0.5 per cent is able to completely check the growth of the organisms.

The paste forms perfect emulsions with water in strength of 0.5 per cent and over, but not when smaller amounts are used. It is quite possible that if perfect emulsions were obtained in still lesser concentrations, the antiseptic or inhibitory action could be demonstrated to be even somewhat greater than the above figures indicate. At the above concentration then, the paste is decidedly antiseptic, at least as concerns the common pus bacteria. We can safely assume from this fact that all of the mouth bacteria, particularly the important ones, are held in check by these same concentrations, as the pus organisms are representative.

As to the strictly disinfectant properties of the paste, the results were peculiar and less definite. Measured amounts of Bouillon were inoculated with the same pus organisms, and incubated for 24 hours. Measured and different amounts of 10 per cent and 20 per cent emulsions of the paste were added, the tubes well shaken and kept for two hours at 38 degrees C. Inoculations were made from each tube into sterile broth and the latter tubes kept in the incubator for 1-3 days. These tubes were examined at regular intervals for signs of growth of the bacteria. Where there was any doubt, microscopic examinations were also made. It was seen early that the paste had a marked injurious action on the bacteria in question when used in the strength of 3 per cent or even slightly less. After being exposed to this amount for two hours the pus cocci and particularly staphylococci, were so affected or injured that when they were transferred to fresh bouillon they required at least two days of incubation to show marked signs of development, whereas ordinarily an abundant growth is obtained in 24 hours and even less. The complete destructive action on the bacteria was not brought about, however, in much stronger emulsion; even 10 per cent, 12 per cent and 13 per cent was not sufficient to kill them, or at least to make the disinfection action complete. In fact the stronger emulsions did not seem to accomplish more than 3 per cent and 4 per cent emulsions.

It is quite possible, in view of these results, that up to a certain concentration the paste has a decided injurious action; and that beyond this strength the paste affects the bacteria or their cell membrane in such a manner that they become impervious to further action and thus are protected from complete destruction. Further investigation might clear this up. LEO F. RETTGER.

New Haven, Conn., Feb. 28, 1908.

(Second Report, April 7, 1908.)

I. CLEANSING POWER.

Determination of comparative numbers of mouth bacteria, before and after brushing of teeth with Kolynos (continued). Method of rinsing employed, as described in first report.

EXPERIMENT 1.

40 cc. washings received from Dr. E. S. Gaylord, March 3. (F.) Washings were diluted to 100 cc. mark and the determinations made. Final dilution 1:200. 0.2 cc. poured in plates.

A (Before cleansing)	4410	colonies on entire plate	Reduction
B (After cleansing)	787.5	colonies on entire plate	82.2%

Total number of bacteria in A, 441,000,000
Total number of bacteria in B, 75,000,000

EXPERIMENT 2.

Same patient as in experiment 1 after having used Kolynos regularly for four weks. Method pursued same as in previous experiment.

100 cc. washings sent by Dr. E. S. Gaylord, March 30. Washings diluted 1:500 and 0.2 cc. of this dilution used in pouring agar plates.

A (Before cleansing)	515 colonies per plate	Reduction
B (After cleansing)	39 colonies per plate	92.4%

Total number of bacteria in A, 128,000,000
Total number of bacteria in B, 9,750,000

EXPERIMENT 3.

100 cc. washings received from Dr. E. S. Gaylord, March 4. Usual method of determination employed. Plates contained too many colonies to permit of any counting.

EXPERIMENT 4.

From same patient of Dr. E. S. Gaylord's 100 cc. washings received March 5. Two sets of plates poured. One with the usual dilutions; the other with dilutions 100 times greater. In the first set far too many colonies to count. Second set:

A (Before cleansing)	216 colonies in entire plate	Reduction
B (After cleansing)	50 colonies in entire plate	76.9%

Total number of bacteria in washings A, 2,160,000,000
Total number of bacteria in washings B, 500,000,000

Note: "Total number" refers to bacteria which *grow* in the plates, and are therefore counted.

EXPERIMENT 5.

Same patient as in experiment 4 after having used Kolynos once daily since March 4. Method pursued same as in previous experiment.

Received 100 cc. washings (A and B) from Dr. E. S. Gaylord, April 4. Dilution 1:500 and 0.2 cc. of dilution poured in agar plates.

A (Before cleansing)	1436,4 colonies in entire plate	Reduction
B (After cleansing)	44.1 colonies in entire plate	97%

Total number of bacteria in washings A, 359,100,000
Total number of bacteria in washings B, 11,025,000

EXPERIMENT 6.

Graduate student with six or seven annoying cankers. Washings obtained directly from him. Estimations made in usual way. Dilution 1:200. 0.2 cc. taken for plates.

A (Before cleansing)	275 colonies on entire plate	Reduction
B (After cleansing)	8 colonies on entire plate	97%

Total number of bacteria in washings A, 27,000,000
Total number of bacteria in washings B, 800,000

EXPERIMENT 7.

Same subject as the preceding, four days later (March 9). Dilution 1:500. Kolynos had not been used for 24 hours prior to this experiment.

A (Before cleansing)	672.5 colonies on entire plate	Reduction
B (After cleansing)	42.5 colonies on entire plate	93.7%

Total number of bacteria in washings A, 336,000,000
Total number of bacteria in washings B, 21,000,000

Subject was instructed to use Kolynos three times a day. He claimed that after each application of the paste he recived relief for a few hours. The cankers remained, however, until the eighth day after the first application of the paste, when they completely disappeared. The subject claimed their disappearance was due to the paste.

Another student who was suffering with cankers was given some Kolynos, with instructions to use it three times a day. On the third day after the first application he reported that the cankers had entirely disappeared.

EXPERIMENT 8.

Tubercular patient sent to the laboratory by Dr. Standish of the New Haven Dispensary. In advanced stages of the disease. Tubercle bacilli in the sputum.

Determinations of mouth bacteria made in usual manner. Dilution 1:500.

A (Before cleansing)	83.4 colonies per sq. cm.	Reduction
B (After cleansing)	8.5 colonies per sq. cm.	89.8%

Total number of bacteria in washings A, 1,314,000,000
Total number of bacteria in washings B, 134,000,000

The greatly predominating organisms in the washings were staphylococci and tetragenus forms. The greatest reduction during the cleansing occurred, also, with these two forms, and particularly the tetragenus which required searching in washings B in order to find it.

Aside from the tuberculosis infection, the mouth was a bad one. The teeth were loose and the gums in bad condition; evidently a severe case of pyorrhea.

Considerable time and effort were given also to the determination of the number of tubercle bacilli present in washings A and B. The number of tubercle bacilli in the washings obtained before the cleansing was too small, however, to allow of any definite results being drawn. The same experiment to be tried on one or two other tuberculosis patients as soon as they can be obtained.

A few scattered tubercle bacilli were found in slides made from the sediments of washings A, while none could be found in those of washings B (after the cleansing), in spite of repeated attempts to do so.

Patient was too sick to try further experiments on him.

EXPERIMENT 9.

Tuberculosis patient (Miss K.).

100 cc. washings (A and B) obtained and comparative determinations made.

		Reduction
A (Before cleansing)	1197 colonies on entire plate	
B (After cleansing)	220.5 colonies on entire plate	81.2%

Total number of bacteria in washings A, 229,250,000
Total number of bacteria in washings B, 55,125,000

II. DETERMINATION OF THE DISINFECTANT.

PROPERTIES OF KOLYNOS.

Method employed was as follows:

20 cubic centimeters of bouillon were introduced into a small glass-stoppered bottle, and sterilized. The bouillon was then inoculated with 10 platinum loopfuls of a 24-hour old bouillon culture of staphylococcus pyogenes aureus. After shaking thoroughly, 1 cubic centimeter of the suspension was introduced into 100 cc. of sterile water 0.2 cc. of this dilution were then poured in agar plates and the latter incubated. Immediately after pouring the first set of plates 10 cubic centimeters of a 10 per cent emulsion of Kolynos were added to the contents of the bottle. After again vigorously shaking, a second set of agar plates were poured in the same manner as the first. After definite intervals additional sets of plates were poured and placed in the incubator. During the entire period the bottle was kept at a temperature of 35-37 degrees C. After the required length of time, the colonies were counted.

EXPERIMENT 1.—(Amount of paste, 3⅓%.)

		Reduction
A (Before add. of *Kolynos*)	200 colonies in plate	
B (10 min. after add. of *Kolynos*)	85 colonies in plate	57.5%
C (1½ hrs. after add. of *Kolynos*)	4 colonies in plate	98%
D (4½ hrs. after add. of *Kolynos*)	2 colonies in plate	99%
E (6½ hrs. after add. of *Kolynos*)	3 colonies in plate	98.5%

EXPERIMENT 2. —(Amount of paste, 3⅓%.)

A (Before add. of *Kolynos*)	325	colonies in plate	Reduction
B (5 min. after add. of *Kolynos*)	140	colonies in plate	57%
C (30 min. after add. of *Kolynos*)	4.5	colonies in plate	98.6%
D (1 hr. after add. of *Kolynos*)	1	colonies in plate	99.7%
E (2 hrs. after add. of *Kolynos*)	0.5	colonies in plate	99.85%
F (5 hrs. after add. of *Kolynos*)	1	colonies in plate	99.7%
G (7½ hrs. after add. of *Kolynos*)	0.5	colonies in plate	99.85%

These results are in accord with those obtained earlier in the investigation, and to a large extent help to clear them up. While Kolynos exerts a strong destructive action on the bacteria employed in the tests, and even within the course of but thirty minutes leaves but few alive, there are a very small number of the organisms which are not killed off. There seems to be but one explanation for this, namely, these few organisms are protected by a sort of a coat, and therefore are impervious to the paste, or are surrounded by other bacteria which form a protective coating for them.

According to these results Kolynos is decidedly disinfectant in its action, although a few scattered organisms are not destroyed. The bulk of them are rapidly killed off.

There was the possibility, of course, that the great reduction of colonies on the plates are due to a mere balling up tendency of the bacteria, due to the paste, so that a single colony represented many bacteria instead of one; but a careful investigation of this question strongly indicated that this was not the case, and that the reduction in the numbers of colonies was due to the actual destruction of the bacteria by the paste.

LEO F. RETTGER.

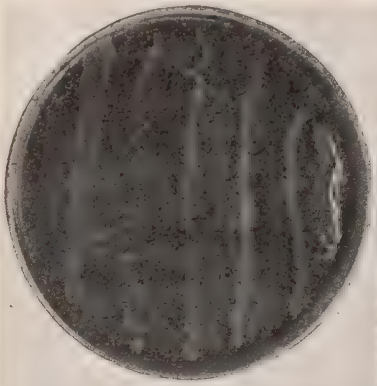
(Third Report.)

THE DISINFECTANT ACTION OF KOLYNOS ON THE DIPHTHERIA BACILLUS.

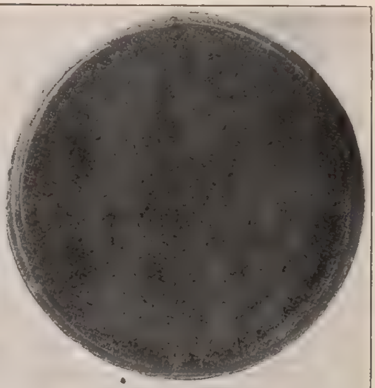
In view of the fact that diphtheria is characterized by a local infection of the throat, it seemed important to determine what disinfectant action, if any, Kolynos exerts on the diphtheria bacillus. For this purpose the following method was employed.

Pure cultures of bacillus diphtheriæ obtained from five different sources were cultivated on dextrose-agar for several days. At the end of this time two of the strains which produced the most luxuriant growth on the agar were selected for the experiment.

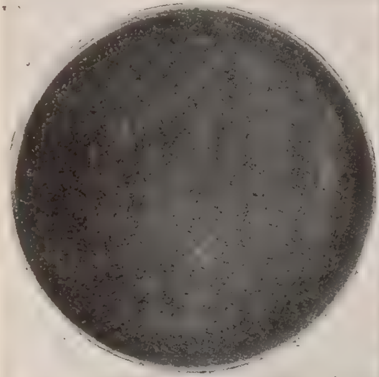
The scrapings of two or three dextrose-agar tube growths were introduced into 20 cubic centimeters of sterile bouillon in a glass-stoppered bottle. The bottle shaken vigorously, in order to obtain a finely divided suspension. One cubic centimeter of the suspension was then introduced into 20 cc. or 100 cc. of sterile water. After thorough shaking, sterile dextrose-agar plates were streaked several times across the surface, by means of a slightly bent glass rod which was dipped in the 1:20 or 1:100 dilution flask. Following this, 10 cc. of a 10 per cent emulsion of Kolynos were added to the original bacterial suspension in the bottle, and the contents again vigorously shaken.



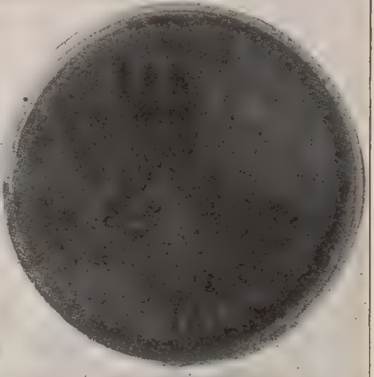
Diphtheria Bacillus before adding Kolynos.



Diphtheria Bacillus
10 minutes after adding 3⅓% Kolynos.



Streptococcus before adding Kolynos.



Streptococcus
10 minutes after adding 3⅓% Kolynos.

Ten minutes after the addition of the Kolynos emulsion, 1 cc. was again introduced into 20 or 100 cc. of sterile tap water, and plates streaked with these dilutions, as before. After further definite intervals, the same process was repeated, the entire experiment usually covering several hours. Duplicate inoculations of plates were always made, and the plates incubated.

The results may be summed up as follows. The plates that were streaked prior to the addition of Kolynos to the bouillon suspension contained almost countless colonies of the diphtheria bacillus along the inoculation streaks, while the plates which were streaked with the suspension ten minutes after the addition of the Kolynos (approximately 3⅓ per cent) contained no colonies whatever along the lines of inoculation. Exposures of the organism to the Kolynos for 30 and 60 minutes, and for one, two, three and five hours likewise brought about a sterile condition of the plates in every instance.

In order to prove that the absence of colonies was due to the fact that diphtheria bacilli were actually killed by the tooth cream, and not merely checked in their growth on the agar plates by the small amounts of Kolynos carried over with the bacteria, several agar plates that were streaked with the same Kolynos dilutions were subsequently inoculated with the diphtheria bacillus. Abundant growth was obtained, thus proving that the Kolynos dilutions of 0.15 per cent and 0.03 per cent were not responsible for the failure of the bacilli to produce colonies in the regular experiments.

Microscopic examination of the Kolynos-diphtheria bottles also showed that Kolynos has little or no tendency to bunch or agglutinate the bacilli and in this way reduce the number of colonies on plates. On the contrary, Kolynos tends to break the clusters of bacteria apart and distribute them throughout the liquid. The powdered chalk may, of course, enclose and protect an occasional organism, as seemed to be the case in some of the earlier experiments; but in dilutions of 3⅓ per cent or less very little of this evidently takes place.

Kolynos has, therefore, a most powerful disinfectant action on diphtheria bacilli, 3⅓ per cent emulsions bringing about complete destruction of the organism within the brief course of ten minutes. In view of this fact, it would be most interesting and important to determine the degree of prophylactic or curative action of Kolynos in diphtheritic or diphtheria-infected mouths and throats.

The above results were duplicated five times.

A single experiment carried on in the same manner as the above, on the streptococcus, the cause of the so-called streptococcus sore throat, showed that here too the disinfectant action of Kolynos was most pronounced, being however less than with the diphtheria bacillus, and slightly greater than with the staphylococcus pyogenes.

LEO F. RETTGER.

New Haven, Conn., May 2, 1908.

PRESIDENT'S ADDRESS.*

BY WM. H. CUDWORTH, MILWAUKEE, WIS.

To the Members of the Wisconsin State Dental Association:

Ladies and Gentlemen—Before attempting to follow the time-worn custom of presenting the president's address, I wish to assure you that the position I have held with you for the society has been a pleasurable one, and I appreciate the honor you have accorded me.

Early in the present year, the chairman of your committee appointed for the purpose of arranging this meeting, suggested that in place of those subjects usually taken up in a paper of this kind, that it be something in the nature of an historical resumé of the early years of the society. At first I was at a loss to understand the reason for this request, but found upon reference to the reports of the organization, that thirty-seven years ago on Tuesday, July 11, this society convened here in La Crosse to participate in the doings of its first annual meeting, it having been organized in the previous autumn.

On September 28, 1870, a meeting of the dentists of the state of Wisconsin, was held in the office of Dr. Henry Faville, pursuant to a call issued by several of the most prominent operators. Dr. Edgar Palmer of La Crosse was called to the chair, and the existence of our state society was begun by the efforts of a small number of men who had in their mind's eye something of the promise of the future of our grand old state of Wisconsin, and more, the need of organization and association among themselves, looking toward mutual benefit, and the advancement of our profession. Among the men who came together for the purpose of forming this society were Henry Faville of Milwaukee, Edgar Palmer, W. D. Brown,

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*Read before the Wisconsin State Dental Society at La Crosse, July, 1908.

D. W. Perkins, C. W. Barnes, J. M. Smith, J. C. Lukes, E. W. Clark, Geo. A. Sherwood, Albert Solliday, C. C. Chittenden, A. Holbrook, Stvenes, Washburn and others;—and they were no laggards, for upon motion of Dr. Brown the chairman appointed a committee of four to prepare and report a Constitution and By-Laws; also a committee of three was appointed to present subjects for discussion, and we find this infant society discussing first, deciduous teeth; second, treatment of exposed pulps; and third, peridontitis, and the report says that the discussion of these subjects "continued for about two hours with interest and profit."

On Thursday, September 29, the meeting was called to order, and the committee on nominations reported the following names as officers for the ensuing year: President, D. W. Perkins of Milwaukee; first vice-president, E. A. Clark of Beloit; second vice-president, A. Holbrook of Waukesha; recording secretary, C. C. Chittenden of Madison; corresponding secretary, E. Palmer of La Crosse, and treasurer, J. C. Lukes of Racine. The casting of the ballot resulted in the election of the entire ticket, and the permanent officers being installed, the organization of Wisconsin State Dental Society was declared completed. Before adjournment of this meeting, a committee was appointed to draft a bill for presentation to the General Assembly of this State, for the regulation of the practice of dentistry in Wisconsin, and we must credit the early and earnest work of this embryo society with calling into existence the influences which finally resulted in the first dental law passed, and approved March 23, 1885,—fifteen years after its inception. At the time the resolution was offered looking toward the passage of this law, there were about fifteen dentists belonging to the society, out of a possible one hundred and twenty-five practicing in the state.

One cannot but admire the courage and persistent effort of these early workers. Their records show that they were as enthusiastic over the introduction at the meeting in Madison in January, 1871, of Green's pneumatic engine, by Dr. E. R. E. Carpenter of Chicago, as we can possibly be over any of the new methods of today;—going so far as to offer resolutions heartily endorsing and recommending it to members of the profession as being an ingenious, practical invention, calculated to save time and labor to the operator, and decrease the suffering of the patient. (That sounds like the inlay talk of today.) At this same meeting Dr. Perkins displayed the great advantage and utility of Barnum's valuable invention, the rubber dam.

From time to time we note among the essayists and clinicians who made the meetings interesting the names of many of the noted men of our profession at that time—Chapman, Atkinson, Taft, Haskell—a little later Marshall H. Webb, and many others, all men that the dental world was looking to for knowledge and encouragement.

The legislature of 1871 granted a charter, creating a body corporate and politic" to be known as "The Wisconsin State Dental Society." And in the same year the code of ethics was adopted which still exists.

In the president's address at the meeting of 1875, he asks for the appointment of a committee for the formation of four or five auxiliary or branch societies, pointing out the possibility of the same beneficial results that the promoters of that idea are using today. At that time in the entire state there were 186 men practicing dentistry. How much to be regretted it is that that suggestion did not mature, so that at the present time we might have a large majority of the practitioners in our state educated and alive to the real benefit to themselves of attending at least once a year a meeting of the profession; bringing them in touch with men whose acquaintance means a promotion of good fellowship, a broadening of the professional horizon, and the enlargement of their ambitions and purposes which comes through such an association.

Passing over the records from year to year we see our society growing steadily, its enthusiasm undimmed, and an unmistakable evidence of advancement and progress along many lines. We note with some regret that some of the meetings of this "body politic" have been devoted to an effort on the part of some of its members to relegate to oblivion some of their competitors who differed as to the construction of the code. This was carried so far that many of the men most deeply interested in dental societies for dentistry's sake became disgusted and retired from the association.

There is much in these records which would be of interest if there were time to recount it. In 1895, the 25th anniversary of this society, we find men whom we all honor and respect making an appeal for a broader and more effective organization, claiming that with the large number of men in practice, 516, the membership of 70 was out of all proportion. Gentlemen, is the need not as great today, is the proportion much better? We have a membership in the neighborhood of 225 to 1,400 registered practitioners. Is not the time ripe for the men of the Wisconsin State Dental Society to stand for reorganization, that we may extend the helping hand to the younger men; that we may be a power for better dental legislation; for a better preliminary education; for reciprocity; for a code of ethics that will embody the "Golden Rule"; and the real things that will bring about the much-talked-of mutual benefit, good fellowship and elevation of our profession?

SOME CRITICISMS.

BY DR. L. P. HASKELL, CHICAGO.

Upon reading a paper and the debates thereon at the May meeting of the Chicago-Odontographic Society, I find some points wherein I disagree with what was advocated.

And first, as to the matter of scraping impressions and models, I have found from long experience that it is unnecessary and unsatisfactory. Take the impression, for instance; you have the jaw in reverse, while in the model the jaw is present. To scrape the impression of a uniform thickness, not too much nor too little, is a very unsatisfactory performance. On the other hand, with the jaw before you, a "relief" of ordinary baseplate wax is easily applied and of uniform thickness. This should extend nearly to the margin of the ridge, as it is very hard there; in fact, if there is a soft ridge the relief should be thicker than farther back, as the flexible ridge yields to pressure. The relief should cover as much of the hard surface as possible, not extending on to the sides to the soft tissue. The margins should be flush with the model.

As to scraping the soft tissue on the model, that is uncalled for, because all that is needed is for the plate to come in contact, not to press upon it.

Scraping for the margins of the plate is unnecessary, especially upon the lobial side. The plate should be worn as high as possible and over the cuspid eminence higher than elsewhere. Instead of scraping then, after fitting the plate, I turn the extreme margin out, perhaps the thirty-secondth of an inch, so it shall not impinge upon the soft tissues.

A correct impression, a correct model, a plate suaged upon a Babbitt metal die, will fit that model, and if that model represents the jaw the plate will fit the jaw. It is along that line I have worked these many years with success. No new impressions, no new dies, no fitting with pliers and burnishers.

To sum up, the plate should rest upon the alveolar ridge, in close contact with the sides and back of the relief, which covers nearly all the hard tissue. Plates can be worn farther back than they are generally made.

The above principle applies to 98 per cent of cases. There are about 2 per cent of cases where the palatal surface is soft. In these cases no relief nor vacuum cavities are needed, but simply fit the plate snugly to the palate.

As to the causes of excessive absorption of process, no mention was made of the effect produced by the non-conductivity of vulcanite. I claim that 80 per cent of upper jaws are sooner or later ruined from this cause alone. Practicing thirteen years before the use of vulcanite, exclusively in plate work, and using it ever since, I have had peculiar opportunity for observation of its effects. Within two years of its use, myself and Dr. Allport, with whom I was associated, noticed an unusual change in the process in the case of the vulcanite plates, and I have watched it ever since.

The statement is made that "plates should not be worn over five or six years." This is true of vulcanite, but not at all of metal plates. I expect a continuous gum dentine to last at least 20 years and have seen scores in wear 25 years and upwards. One of the first I made, 55 years ago, I saw in wear 40 years later. Two years ago I made a set for a lady 80 years of age, who was wearing a set I made her 45 years previous. Old as she was, she would have nothing different. A few years ago I visited an old patient in Boston, who was wearing a set on gold which she had 50 years. I was surprised to find what good condition the jaw was in. The temporary plate should never be worn over two years, as excessive absorption takes place.

Much has been written about the expansion of plaster, but I have never found that it interfered with success of the denture. Theoretically, what results from the expansion? In the case of the impression it can expand only into the opening, which results in contraction. In case of the model it cannot expand inwardly, because held by the walls of the impression. Theoretically, the model is smaller than the jaw.

As to varnish, sandarach is objectionable because it leaves a film; on the other hand, shellac, mixed thin, penetrates and leaves no film, therefore preferable both for impression and model. I find no occasion for using any powder on the model in molding. Soap the impression, washing out the excess.

Cores are not needed in one case in fifty, and should be made of plaster and asbestos. In ordinary undercuts shape the model flaring in all cases, so it will drop out of the mold, never to be lifted out. Set the model highest in front and slope the heel more; then the model slips out easily.

The Chase oiled sand is excellent, as it is always ready for use, packing with a potato masher, handle at the sides, using a ring 5 inches in diameter and 2½ inches deep. Babbitt metal has all of the requisites for a dental die.

The Hawes flask I abandoned fifty years ago as unnecessary. Prepare the model so it will drop out readily, never to be lifted out.

After all that is done otherwise, there are more failures from faulty articulation than from misfits or other causes, and too much pains cannot be taken in the final adjustment in the mouth, using the thick articulating paper, English make.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-FOURTH ANNUAL MEETING, SPRINGFIELD, MAY 12, 13, 14, 15, 1908.

DISCUSSION OF DR. PROTHERO'S PAPER.

Dr. C. N. Thompson, of Chicago:

On account of the many slides that have been shown, I find this paper hard to discuss. Nevertheless there are a few points I want to touch on.

In the first place, I would like to thank the essayist for his splendid exhibition and exposition of this subject. The character and excellence of the slides far surpass anything I ever saw, and it has been a revelation to me. But one of the things that impressed me most was the length of time it must have taken to produce them.

and when we appreciate the difficulties of securing models of that date with their history, and the work of photographing, retouching and bringing them up to the excellency we saw, it is beautiful.

The first lesson I noted was that there is little in anything that we do that is absolutely new. For if we go back into history we will find that somebody has had the same idea before, and that most of the supposedly new things are simply old acquaintances in new dress, up to date. The progress noted is mostly in detail, and yet progress in detail is just as commendable as if it were in the main.

The next precedent I saw established by the paper was the fact that fixed bridges, or attachments of any kind, are wholly dependent upon the correct treatment of the roots of teeth supporting them. I think that a tooth had better be extracted at once than improperly treated. This is the key to all successful partial restorations, whether it be removable or fixed, because the removable as well as the fixed is dependent on the condition and permanency of the roots, and, it seems to me, that here is where we most often fail. And it matters not whether the dentures are removable or fixed, as soon as one of the piers becomes defective, then the whole is lost.

There is another feature, and well illustrated by the paper, which is, the removable attachments for partial cases are more permanent than the fixed, and it is logical to believe that any denture would get some support from contact with the intervening gum tissue between the piers. I do not believe that we realize as a body how important this is; there is too much reliance placed upon the strength of roots in bridgework when there is a possibility of greater resistance by applying part of the stress to the gum tissue. Then again, the appliances shown teach how very necessary is a proper conception of the requirements of the case in hand, and we should realize how many well-wrought pieces of prosthetic work are proving failures because of the operator's lack of consideration as to the difficulties of the case, and the stress to which the fixture is finally to be subjected.

The constructive plan of all prosthetic work, has as much, if not more, to do with success than fineness of detail in fitting, because, like any other structure, if it is placed upon an inadequate or poorly balanced foundation, the stress of mastication afterward is sure to weaken the attachments at some point, foretelling an early failure.

I do not intend to discourage nicety of detail, because that is very necessary, but it, and proper construction should be considered as one, in which case we might hope to get stable fixtures.

This leads to a point which in my judgment has been too long neglected. There never was a case presented in prosthetic dentistry for which there was more than one correct solution. There may be several ways of doing it that would answer, but there is only one best way. If this is true, we should find a way to select the best constructive plan in all instances. For instance, if a civil engineer can construct a building or bridge of any weight or height from blue prints, originating at the hand of an architect working from statistics, is it not possible that we can arrange to adopt some systematic way of tabulating our experiences so that we may return to them for guidance and in this way know just what appliance each case requires to give the best results?

Following that line of thought, it has often occurred to me that in some way we ought to know the resistive power of each tooth, for instance, starting with the cuspid, will it carry more than one intermediate as a part of a bridge? If so, will it carry two or more? Will the bicuspids carry one intermediate as a part of the bridge or more? On account of its great strength, will the first molar carry two, or maybe three, the second molar the same? And so on through the whole arch. Then we could take an impression of the mouth and determine by measurements and comparisons, being governed by the occlusion and the stress to which it would be subjected, and decide what kind of appliance would give best results.

As a result of the comparative recentness of all our procedures, we as a profession are in a curious position among scientific workers, there is no other profession or skilled occupation in which the individual is permitted to be a law unto himself as are dentists.

There is really no history to dentistry beyond the beginning of our time, as compared with other sciences. We are not old enough as a profession to have many precedents, and we need a great deal of careful work to collect and systematize what we already have scattered about, and it would be just as feasible for us to formulate a plan of collecting data for future use, as it was in the past for those who were responsible for the niceties and accuracies of engineering problems of the present day.

In connection with these removable appliances, I am minded to say that beyond a correct constructive plan, the secret of success lies in the nicety with which these things are made.

Dr. L. P. Haskell, of Chicago:

Dr. Prothero, I think, failed to state that the first picture he showed was of a piece of bridge work 2,500 years old. That piece of work I have had in my hands. It was owned by Dr. Barrett, of Buffalo. The case was evidently one of pyorrhea. The teeth replaced were natural teeth with their roots. The bands were pure gold, fitted to each tooth and soldered together, then extended around the teeth that had dropped out, which were thus replaced. It was found in an Etruscan tomb in Italy, dating 600 years before the Christian era.

A bridge is the right thing in the majority of cases when properly constructed. Occasionally there are cases where a nicely fitting gold plate with properly adjusted clasps is preferable to a bridge. When I say properly adjusted clasps, I mean clasps adjusted in the mouth. Oftentimes, the clasps are improperly soldered to the plate; as I have seen in some instances, where the clasp was soldered from one end to the other, so that its usefulness was utterly destroyed. The clasp should be attached to the plate not more than 3/16 of an inch. There are very few of these plates made nowadays because bridges have taken the place of them.

Dr. J. N. Crouse, of Chicago:

There has been some very skillful prosthetic work done by Dr. Allen G. Bennett which has not been included in this report of removable pieces, and it would have been an addition if Dr. Prothero had gotten hold of it.

Dr. Prothero (closing the discussion):

There is very little I care to say in closing the discussion. The only thing we have to go by in reference to the necessary data is our records of the past, and these are imperfect in many instances. Very few of us know how well appliances constructed in a certain way have stood, so that it is necessary to do a great amount of work along this line.

The idea advanced by Dr. Thompson of being able to determine the amount of stress our work will have to sustain is a good one, and ought to be taken up. I think we could arrive at some conclusions which would be of decided benefit to us, if we studied carefully the amount of stress applied to substitutes, which necessarily must be less than that applied to the natural teeth, and by getting some data on this subject we would be able to determine whether a fixed bridge or one of the removable type is indicated. It is difficult to draw a distinct line between removable bridges and partial dentures. They merge one into the other. What one dentist might term a removable bridge, another one would call a partial denture.

Dr. Haskell's remarks might be taken as spplying to removable bridges. We have all made removable bridges in times gone by and called them by another name. A well-constructed partial plate in many instances will answer better, will give the patient more service and more comfort than the indiscriminate application of fixed bridgework. I do not wish to convey the impression that fixed bridgework is hardly ever indicated, but I wish to say that fixed bridgework has been indiscriminately applied in the past and is being applied now in some cases where for hygienic reasons, as well as esthetic reasons, removable appliances would answer the purpose better.

REPORT OF THE CLINIC COMMITTEE.

DR. EDWARD T. EVANS, DECATUR, SUPERVISOR.
DR. FRED W. GETHRO, CHICAGO, ASSISTANT.

The following is the report of the clinics of The Illinois State Dental Society meeting, held in Springfield, May, 1908:

WEDNESDAY MORNING.

CHAIR CLINICS.

1. Dr. Truman W. Brophy, Chicago. Operated on cleft palate.

2. Dr. W. H. G. Logan, Chicago. No patient. Exhibited a case of pyorrhea that had been treated two years previously, with the history at that time of a number of recurrent lateral abscesses. One treatment was given at the clinic two years ago and without any care whatever since, the tooth has become firm in its socket.

3. Dr. F. W. Keel, Monticello. Showed a practical case of removable bridgework.

4. Dr. Grafton Munroe, Springfield. Exhibition of two orthodontia cases, models and patients. Bilateral distal occlusion, with

some torsal occlusion of centrals. Ages of patients, eight and eleven years. By reason of the distal occlusion, the prominence of superior front teeth was very marked in both cases. In the eight-year-old case, Angle's appliances were used and reciprocal force applied in the usual way by rubber ligature passing from hooks on upper wire arch to the tubes on clamp bands of lower molars. Torsion of centrals was accomplished by band with spurs on palatine surface and wire ligatrues passing from these to the wire arch. The eleven-year-old case was corrected mainly by the use of a suggestion obtained from the Davenport Bite Guide, consisting of platino-iridium band .002 of an inch thick on centrals, soldered together and bite plane or extension built out on palatine with button of gold against which the lower teeth bite and slip into groove made between the button and the bands on the teeth. This acted as a retainer also.

5. Dr. G. H. Kopperl, Jacksonville. Placed a filling in a superior left central incisor, distal surface, using Ascher's artificial enamel.

6. Dr. Percy B. Idler, Chicago. Gold filling. No report.

7. Dr. C. C. Corbett, Edwardsville. A cemented amalgam filling. Patient, Dr. Albert Lambert, Springfield. A proximo-occlusal restoration in the distal surface of the lower left first molar, extending from gum margin to center of grinding surface, and involving the lingual and buccal walls. After preparing the cavity, it was lined with soft cement, then inserting a good-sized piece of amalgam, pressing it tightly to the walls of the cavity, with a burnisher, pressing out the soft cement at the edges of the cavity, freeing the edges of cement, then adjusting the matrix, the remainder of the filling was inserted.

8. Dr. F. W. Willard, Anna. Absent, no excuse.

9. Dr. C. L. Snyder, Freeport. Artificial enamel. Rubber dam should first be applied and cavity prepared with square margins much the same as for an inlay but retentive in form. Wipe the cavity with alcohol and see that it is clean and dry. Mixing slab and instruments must be clean and free from dust. With the glass rod place the required amount of liquid on the slab, to this add the powder as fast as the liquid will take it up by gently mixing with spatula. When required amount has been incorporated, the mass may be spatulated for a short time only. When thoroughly mixed, insert into the cavity as quickly as possible, using bone or ivory

instruments. After the cavity is well filled, slip a celluloid strip (that has previously been slightly greased) between adjoining tooth and filling and force home by pulling on both ends of the strip or burnishing with a steel burnisher, forcing excess between strip and tooth. If necessary, it may be polished, but the surface must be well-covered with vaseline and all scratches removed by the use of extra fine cuttle-fish disks. Cover the filling with hot paraffin before removing rubber dam.

10. Dr. Austin F. James, Chicago. Instrumentation in prophylaxis and the treatment of pyorrhea alveolaris. The points of the clinic were the demonstration of the planing principle in instruments, using the tooth as a fulcrum, gauging the depth of the cut and acting as a guide for the instrument in removing deposits in pyorrhea and smoothing the gingival margins of enamel in prophylaxis. Also that the planing principle or the use of an instrument which touches or bears on the tooth posterior to the cutting edges, greatly lessens the pain in the removal of deposits on sensitive teeth.

11. Dr. J. K. Conroy, Belleville. Gold filling.—Disto-incisal cavity in upper central incisor. Cavity was extended to center of middle lobe on incisal edge and slightly dipping down to more securely lock the filling at incisal angle; cavo-surface angle was beveled throughout, filling was started with cohesive until cavity was filled to include cavo-surface angles and finished with Keeton Williams' gold. Cavity was prepared almost entirely with chisels, the only bur used was a small one millimeter inverted cone bur.

12. Dr. Ralph W. Parker, Chicago. Saving children's teeth by the use of oxyphosphate of copper cement. Several children presented and a half dozen or so fillings were inserted in both permanent and deciduous teeth. The point most emphasized in the clinic was the fact that in filling teeth with oxyphosphate of copper cement, it is not necessary to remove all the decalcified dentine over the point in the cavity just covering the pulp, but that may be left intact—in fact, such a procedure is recommended—and with peripheral walls and margins sound and dry, the cement mixed to the proper consistency is inserted. Heat is then applied, preferably by means of blasts from hot air syringe. In a half minute or so the filling hardens, after which moisture will do no harm. No cement is so useful in deciduous teeth, and in many cavities in permanent

teeth, oxyphosphate of copper is indicated. It is a pity its color limits its use to so great an extent.

TABLE CLINICS.

66. Dr. H. J. Frank, Chicago. Porcelain jacket crown. On a root covered with a platinum matrix, a porcelain jacket crown was constructed of special high fusing porcelain body, bringing out that beautiful yellowish tint so desirable and resulting in a crown very life-like in appearance. The porcelain was fused in an electric furnace at a temperature of 2,560 degrees Fahrenheit, and the entire work from start to finish was completed in 50 minutes. One baking was all that was necessary in this case and the shrinkage was so slight as to be hardly noticeable to the naked eye. The adaptation of the crown to the neck of the tooth was perfect, leaving absolutely no shoulder at the junction.

67. Dr. B. N. Hughes, Mendota. Demonstrated root preparation for bandless detachable pin, porcelain crown.

13. Dr. A. Brom Allen, Chicago. Demonstration of instruments and methods in removal of impacted lower third molars. Table clinic on instrumentation in extraction gives the dentist an opportunity to see the methods and ask questions, while in gas administrations he can not see the mouth and must take the operator's word for results and conditions. Forceps should have blunt end handles so that they can be held in the palm of the hand, thus enabling the operator to apply force, going high up under the tissue. By using the thumb pressure, one cannot apply much force and the thumb is often pinched in case a tooth fractures. In the removal of impacted lower third molars, instead of cutting the cusps away with a disk, and by this method you do not reach the mesial cusp without great pain and laceration, drill under the tissue around the tooth with a medium sized bur, where the plate of bone is heavy, and remove the tooth with a forcep which applies force in three directions, where the elevator only gives a distal one. The bur does not lacerate the tissue and even after the process has been removed, which gives the tooth more freedom, great care should be used, as it still requires much force to remove the tooth.

14. Dr. Edwin A. Kartack, Springfield. Extraordinary things in vulcanite work. Appliance No. 1. A combined restoration, by means of vulcanite rubber, of nose and hare-lip. Appliance is made all in one piece of white vulcanite rubber tinted to suit complexion

of face. Method of procedure: First, obtain plaster model of entire face; second, build up parts to be restored with paraffin wax; remove, invest, pack and vulcanize. The appliance as shown is held in place by a gold pin passing through the fleshy part of the septum of the nose and also through the adjacent vulcanite inside the nostril. This pin is readily removed by the patient at will. It is passed through the fleshy portion of the septum in much the same manner of a lady's ear-ring through the ear.

Appliance No. 2. A small vulcanite strip made to fit the anterior lower incisors from the cutting edge to and beyond the gum margin labially. Outer surface highly polished. This appliance is used by cornetists to prevent bruising the lower lip against irregular anterior teeth while playing. It can be modified to suit other kinds of horns or mouth instruments.

15. Dr. Arthur G. Smith, Peoria. Demonstrated method of casting gold cope for detached post crowns, using large models for same. Clinician also showed a finished case in position in his own mouth.

16. Dr. R. N. Lawrence, Lincoln. Exhibited pyorrhea instruments of his own make and demonstrated their adaptability in deep pockets on teeth in position in a human jaw, and gave practical evidence that all parts and surfaces of the roots could be reached and the deposits removed.

17. Dr. G. B. Fitzwater, Sullivan. Demonstrated the making of a cast plate, using "Aardentalloy" (Dr. Brophy's alloy of aluminum), had a case prepared ready for the heating, demonstrated the heating and casting which required but forty-five minutes. The principal points brought out were the minimum amount of shrinkage and the greater strength, as compared with a swaged plate.

18. Dr. J. H. Prothero, Chicago. Occlusion of artificial teeth.

19. Dr. B. M. VanDervoort, Bloomington. Gold crown with porcelain cusp. This crown is particularly applicable where we wish to place a gold crown in opposition to a plate tooth or porcelain crown. Make gold band to fit root, and articulate, take common diatoric tooth and grind away until only cusp is left; taper cusp from occlusal toward gingival portion. Strike up a backing of 36 gauge pure gold, fit the cusp, with backing in place, on band and articulate. Remove porcelain and solder backing to place, then cement porcelain cusp to place.

20. Dr. Geo. L. Kennedy, Villa Grove. Bridge abutment on a cuspid. The root is prepared for a post, the mesial, distal and lingual surfaces ground so that the wax burnished on surface will draw. Inlay wax the thickness of attachment burnished on mesial, distal and lingual over projecting end of post. Then draw off with post in position. The wax is then reproduced in 22 carat gold by the casting method. The main points claimed for this anchorage are that it exposes the minimum of gold and gives the maximum of strength and at the same time is quickly and easily made.

21. Dr. W. H. Barnfield, Kansas. Demonstrated method of polishing amalgam fillings. After filling has hardened sufficiently to be polished, smooth the surface with a large bur or stone, then use moose-hide points, or wheels with moistened pumice stone, finish by using moose-hide points with Spanish whiting. This gives a highly polished surface.

22. Dr. F. H. McIntosh, Bloomington. Wax model for inlay. Shaping wax for inlay model by the use of matrix made of sheet steel held firmly to gingival margin with wood wedge, also the use of celluloid film strip, to hold wax in proximal cavities while forcing wax in same. The investment of the model consists in using a quill toothpick for spatula to spatulate investment compound on every portion of model. When the complete investment was made, the flask was turned upon a blotter that the surplus moisture might be taken up.

23. Dr. A. S. Waltz, Decatur. 1. Correct root filling. Prepare the canals properly and as thoroughly as possible. Use gutta-percha mixture made by dissolving gutta-percha in equal parts of chloroform, oil of cajaput, eucalyptol. After the choloroform has evaporated, a stiff mass is left which can be picked up with the point of a hot root filler and carried to the apex of the canal. Make a point of gold by rolling No. 4 foil between the thumb and fingers, anneal and roll to suitable form for case in hand. The rolling will, with the annealing, stiffen the point sufficiently to allow of its being forced into the canal. After canal is moistened with gutta-percha mixture, the point is forced home and packed to place. A minimum of gutta-percha is used and no opportunity is left for absorption of secretions as with gutta-percha used alone. Cement can be used in place of gutta-percha, and tin instead of gold. Preference is

given the gutta-percha mixture because it acts as a lubricant in the canal and an excellent effect is produced by the medicaments.

2. Use of pinless crowns in place of ordinary plate teeth in dentures approaches very near to the ideal in several respects. Being made to replace the natural teeth as crowns, they are the best imitations of the lost teeth to be had. The rubber is packed in the pin openings and allowed to extend around the neck of the crown, which will give them ample support. The finished plate gives a beautiful result with the teeth life-like in form and appearance, the interdental space being reproduced as is not possible with any other teeth at present manufactured. These teeth should be sold for less than a pin crown and would do away with any controversy over possible ill results with base metal pin teeth.

24. Dr. A. M. Harrison, Rockford. Oxide of zinc lining for attachment of porcelain inlays. Zinc oxid heated to a temperature of about 2,800 degrees becomes hard, vitrified and granular. To two parts, by weight, of the granular oxide of zinc, which is the principal constituent of cement powder, is added to one part of foundation body. Give the inlay matrix a thin coating of this mixture, having it quite moist. Do not jar to place, for the coarse oxide of zinc would then come to the surface and the foundation body would settle to the matrix. Place in furnace, but do not bring to the temperature required to fuse the foundation body. The coating will show a distinct yellow color when taken from the furnace, but will change to light gray as soon as cooled. Proceed with the foundation body as for ordinary inlays. Upon removing the matrix, if you find some part of the base slightly glazed, scratch it with a sharp-pointed instrument and the granules of the zinc oxide will appear. You will now have a finished inlay, having not only a roughened surface to which the cement will cling, but also one with which the liquid of the cement mix will unite chemically and there will be actual cohesion of the inlay surface and the cement.

25. Dr. W. E. Foster, Danville. Demonstrated the use of crystal gold for cervical fillings, and the starting of fillings in sensitive cavities to save deep undercuts.

26. Dr. B. J. Cigrand, Chicago. Absent. No excuse given.

27. Dr. P. J. Wendell, Ottawa. Exhibited sanitary bridge for lower jaw.

28. Dr. J. P. Luthringer, Peoria. A solid gold bicuspid crown

with porcelain facing; or, in other words, a Richmond bicuspid crown. Indicated where there is a short bite; also when it is desired to make an attachment for a partial plate, and where, through loss of other teeth, the principal stress of mastication falls on the bicuspids. Manner of construction: Make a Richmond crown in the usual way, using 20-carat solder; on the lingual aspect of this build up with inlay wax, soften the occlusal portion and close articulator; when wax is hard, carve cusps, make a die and counter-die and strike up cusp; trim edges to fit the edge of facing nicely; heat cusp a trifle and place back on wax and close articulator; the heated cusp will melt wax sufficient to allow it to sink to perfect occlusion. Exaggerate points of contact with a little melted wax, then cut two strips of 1-1000 platinum foil to cover the exposed wax, lapping them at the center lingually; seal all the edges with wax, scraping away the surplus. Bend back the lapped ends of platinum at an acute angle, leaving the wax exposed lingually about one-eighth inch. Now invest. The investing material will engage the end flaps and hold them in place. Pour out wax and fill with 18-carat solder and polish. Steel facings may be used; or the ordinary facings may be removed before the first soldering, the holes being filled with lead pencil points. The facing may be cemented in place finally.

29. Dr. T. T. Baker, Litchfield. A simple method of removing bridges without mutilating the abutments. By using an instrument with a curved point that fits in the interspace adjoining the abutment; having the lower end curved up with a surface flattened so that a small mallet can be used and with a few sharp, quick blows loosen the cement in the crown from the tooth. Each abutment is treated in the same manner. One may use a copper wire, No. 30 gauge, passing it through the interspace adjoining the abutment, bringing it down forming a loop; and with a double end burnisher in the lower end of the loop tap with a mallet to jar the cement loose, bringing the bridge away intact.

30. Dr. C. H. West, Farina. Demonstrated the use of vulcanizable gutta-percha in plate work as follows: Soften in hot water and press to model with the fingers much the same as you would work wax; soften in same way enough to form roll along ridge on which to place the teeth; heat the teeth and set in the gutta-percha; with a hot spatula shape up as desired; remove from model and try in the mouth; changes can be easily made by applying heat

to the part where change is wanted; replace on the model and take a strip of pink rubber wide enough to extend from the margin of plate to about half the length of the teeth; heat one side over flame and put to place, pressing to place with the fingers; then with hot spatula trim around teeth. Take from model and paint palatal surface with equal parts of bisulphide of carbon and gasoline, which will soften the surface so it will adhere to the model when it is replaced. Seal all margins with a hot spatula, invest in flask and without opening vulcanize and finish as usual. This method is especially good for partial plates. For repair work, it needs no under cuts, simply roughen with file or bur and spread on the freshened surface with a hot spatula, invest and vulcanize. Vulcanizing should be at about 310 for 70 to 75 minutes.

31. Dr. L. H. Arnold, Chicago. Excused.

32. Dr. T. A. Griffin, Macomb. Vulcanite teeth in bridge work. A bridge, made of ordinary teeth, such as are used in plate work. A coping is swaged over each tooth. In pin teeth, pins are bent back to hold coping to place. In the use of pinless teeth, the coping is swaged well down into hollow of the tooth. Teeth and copings arranged per model, as in constructing any other bridge. and waxed together. Porcelain teeth are removed and copings left waxed together, invested and soldered together, and polished. Porcelain teeth are cemented in place and bridge completed. Advantages over old methods: Stronger, looks better, easily and cheaply repaired, more cleanly, porcelain cusps. Disadvantages: Takes just a little more time to construct a bridge of this kind.

33. Dr. L. R. Snowden, Peoria. Some things to be done with a casting machine. Showed the restoration of a bicuspid, with the buccal wall split off, leaving the lingual wall strong, by casting gold on to the post extending into the root canal and facing ground into position. The gold extending over and protecting lingual wall. Another case of the lingual wall splitting and restoring by casting gold on to a post set into the root canal and extending over and protecting buccal wall. Another case of restoring a central incisor by casting gold into cavities prepared in a regular inlay manner in the remaining central and lateral.

68. Dr. Lee K. Stewart, Chicago. Gold inlay from cement model. This method of making a cement model of the tooth by using the Brewster press to force cement into an impression set in

the cups prepared for the press, insures an exact reproduction of the cavity and adjacent parts of tooth. Working from a cement model takes much less of the patient's time, lessens the use of cold water in the mouth, gives an opportunity to recast inlay without seeing the patient if anything has happened to wax model or mold, affords a chance to make a hollow inlay or cut away any part you may wish before investing the wax, and, by placing the casting in the model, you have a definite outline for finishing the inlay.

69. Dr. B. M. Smith, Springfield. Method of replacing bicuspid with a bridge without devitalizing or using an inlay in the cuspids. The clinic was given. An intelligent description cannot be given without models.

70. Dr. H. Nelson Orr, Chicago. Showing construction in detail of cast bridge, using diatoric teeth. The bridge was shown in three steps of construction—in the wax, the cast piece as it comes from the investment and the finished bridge in place on model. The bridge replaced two upper bicuspids, the attachments being cast gold inlays in cuspid and first molar. The diatoric teeth were cut out proximally deeper and wider at the cervical portion, gradually lessening in depth to the occlusal surface, this leaving, when cast, a strong piece of gold in the center and at both attachments.

71. Dr. A. G. Johnson, Chicago. Keeton-Williams dental gold. Showing ease of manipulation. All breaks or crumbling of gold prevented by use of as large an instrument as cavity will permit, seating gold carefully before pressure is applied. Keeton gold spreads under pressure, making it an easy gold to work rapidly. Always use the mallet, making a dense filling, which cannot be attained by hand pressure alone. Remember to seat all pieces of gold with large instrument before applying pressure. Build to the surface and finish with usual methods.

FRIDAY MORNING.

CHAIR CLINICS.

34. Dr. H. A. Potts, Chicago. Deep injection of alcohol for relief of tri-facial neuralgia. The patient had had a severe neuralgia, at times paroxysmal in character, for more than ten years, which had resisted all treatment. The part involved was the region supplied by the second branch which was injected at its exit from the skull, viz., the foramen rotundum. The needle employed was one

adopted by Levy and Bandonin, which is graduated in centimeters up to 5. The needle was inserted at the lower border of the zygoma at a point 5 cm. posterior to a line corresponding with posterior border of the orbital process of the malar bone, this line being continued downward to the lower border of the zygoma, the needle being directed a little forward and upward. At a depth of 5 cm., as shown by the gradations on the needle, 2 cc. of 75 per cent alcohol with a little cocaine was slowly injected. Five minutes afterward a slight anaesthesia over the parts supplied by that branch was noticed, which proved the success of the operation. The patient was free from pain and eight hours later expressed himself as feeling better than he had in years. Upon the slightest return of the pain the operation will be repeated, after which relief for some months, or even two years or so, may be expected.

35. Dr. P. S. Orth, Monmouth. Absent. No excuse given.

36. Dr. W. C. Smith, East St. Louis. Excused.

37. Dr. W. B. Young, Jacksonville. Demonstrated filling temporary teeth, using oxyphosphate of copper as filling material.

38. Dr. Lester F. Bryant, Chicago. Ordinary facings as replaceable teeth in cast bridge work. After the teeth are ground into place, grind a bevel on all the edges; then back the teeth with platinum 1/1000 of an inch. Then wax up, care being taken to get the wax very smooth, as the smoother the wax, the less finishing will need to be done. The teeth should then be removed by tacking a piece of sticky wax on each facing, affording a handle to pull the facing out of the backing. At this point, see that all traces of wax or vaselin is taken off the inside of the backing, because wherever there is wax or vaselin there will be gold when finished. Next take carbons, such as furnished by Mabie, Todd & Co., 149 Dearborn street, Chicago; signify the letter "R" when ordering, as that is the exact size of a tooth pin. These are inserted into the pin holes, care being taken to have surplus enough for the investment to hold to. The case is now ready to invest. As a precautionary measure, the clinician advised a "sprue" for each 5 dwts. of gold to be cast. The object of the backing is to facilitate the removal of the facing and to strengthen the wax. The teeth are cemented to place when the case is finished. Repairing: Remove pins with "Little Giant Pin Puller" and then take an impression of the backing with modeling compound. Fill this with cement, as this shows the points where

the pins go. Drill the holes with a No. 19 gauge drill and select facing; grind to fit cement model. Then cement to place.

39. Dr. H. W. Freeman, Grant Park. Demonstrated use of Abbey's non-cohesive gold foil; placed a filling in occlusal cavity of superior right second molar.

40. Dr. J. G. Turner, Aurora. Demonstrating manipulation in cavity filling of artificial enamel in distal cavity in lower left lateral.

41. Dr. M. W. Olson, Galesburg. Excused.

42. Dr. J. P. Buckley, Chicago. No patient.

43. Dr. Marvin L. Hanaford, Rockford. Gold filling in incisor. Case: Mesial cavity in right upper central incisor. The main point shown was the very free cutting lingually for access and convenience in introducing the gold. Cavity was extended gingivally to include injured enamel. Labial wall was strong and when prepared and beveled, only a slight display of gold was necessary. Gingival wall was squared out and retentive angles or slight pits were then cut to retain first pieces of cohesive gold. Labial wall was slightly grooved and the extension of cavity toward the incisal edge also made retentive. Cohesive gold cylinders with hand malleting were employed throughout.

44. Dr. Fred W. Parker, Chicago. Cavity preparation for gold inlay. Disto-occlusal cavity was prepared in lower left second bicuspid. Clinician demonstrated first that there was no "tooth mutilation," as the cavity walls were extended no farther than they should have been for a filling of gold foil, and, secondly, that just as much and even more, care is to be exercised in obtaining the proper cavity form to hold filling to place and resist the stress of mastication than is required in case foil is used. Cement alone will not anchor a gold inlay, and it is the belief of the clinician that much of the criticism of the gold inlay, and the most of the cases of failure are attributable to faulty and worthless cavity preparation. The inlay has since been cemented to place and certainly is much more than "a cement filling pushed to place by a chunk of metal."

72. Dr. A. H. Peck, Chicago. Demonstrated using platinum and gold foil in proximal filling in upper lateral incisor.

TABLE CLINICS.

45. Dr. F. E. Roach, Chicago. Cast base porcelain crown.

46. Dr. R. Rogers, Scales Mound. Excused.

47. Dr. F. E. Linder, Troy. Excused.

48. Dr. C. N. Johnson, Chicago. Models showing cavity preparation for bridges and some cast gold inlays. Demonstration of flat seats for inlays to rest upon. The use of the step anchorage in cavities in the proximo-incisal surface of incisors for porcelain inlays, with the margins so formed that no thin edges of porcelain will result. Demonstration of cavities for large restorations in molars and bicuspids with cast gold inlays. Some specimens of large cast gold inlays fitted to the cavities in the models.

49. Dr. J. W. Ritter, Charleston. Excused.

50. Dr. C. B. Warner, Urbana. The asbestos disk. A method of making disks of asbestos by using an ordinary harness punch of the revolving kind which punches several sizes. The asbestos paper should be thin, strong and closely woven. Used as a pulp protection under large fillings, the advantages are, briefly: the non-conductivity of asbestos, the ease of using, the small cost, the non-irritating effect, the advantage with medicaments and its fredom from deterioration.

51. Dr. J. E. Aigley, Farmington. Excused.

52. Dr. H. W. Boone, Champaign. Swaging gold backing to facings, crowns and bridge teeth. Facings or porcelain teeth are imbedded in dentalac, pure gold plate, preferably 36 gauge, is then swaged to same by placing cylinder with plunger over imbedded facing or tooth and bringing pressure on same by blows. Any pliable substance can be used as medium between plunger and porcelain, a soft thick rubber disk being preferred.

53. Dr. Elliott R. Carpenter, Chicago. Excused.

54. Dr. J. C. Warnock, Kewanee. Excused.

55. Dr. H. G. Trent, Rock Island. Excused.

56. Dr. E. B. Strange, Hillsoro. Demonstrated use of Ideal Base Plate and a correct method of taking the bite.

57. Dr. J. G. Reid, Chicago. Gave clinic, showing making of models for inlay work.

58. Dr. Henry L. Whipple, Quincy. Showing steps in construction of cast gold inlays. Began with the prepared cavity and showed method of making wax model, investing same with two investments; the first fine and the second coarser, and making the inlay with a compressed air outfit. Also showed a centrifugal attachment for lathe converting a cylinder into a bucket and hooking

this to an arm attached to lathe. The motion is begun at the instant the gold is properly melted.

59. Dr. C. R. Lawrence, Bethany. How I teach my patients dentistry. Mounted models, etc., were shown demonstrating their value by pointing out how very difficult it is to give our patients a clear conception of what we wish to impress upon them. Much of this difficulty can be obviated by the dentist preparing some models, charts, etc., to be used in connection with his talk at the chair. For instance, you wish to impress upon a patient the importance of the preservation of a first permanent molar or any of the temporary teeth, in its relation to occlusion of the teeth. First, show them, with models, what you mean by occlusion; then show them models showing the results on occlusion caused by the loss of these teeth. Carry the same principle all through your practice and the result will be more grateful and better educated patients.

60. Dr. C. M. Baldwin, Chicago. Demonstrating use of artificial enamel. The most important feature of the clinic was the new method of mixing, as taught by Herr Steenbock, the chemist who originated and developed this material. Instead of mixing thoroughly as at first directed, the new method is to add about twice as much powder as liquid, mixing only slightly to dampen the powder, just to know how much more powder may be added, but not stopping to rub at all, or even to gather all of the scattered dry powder into the moistened mass. Additional powder in small quantities should be brought into the mixture until it becomes quite stiff.

61. Dr. S. T. Butler, Sullivan. Preparing gold foil, and a combination gold and amalgam filling. The method of preparing gold foil demonstrated, was to roll it, either in full sheets or parts of sheets, by placing gold on a flat chamois skin pad and using an ivory spatula with a straight, thin edge. The spatula was placed on the left edge of gold to be rolled, held at an angle of about 45 degrees and moved rapidly to the right.

The combination gold and amalgam filling was made by starting filling with amalgam and finishing with crystal gold, the gold being used before amalgam set. Used in this way, the first few pieces of gold are amalgamated, thus making a solid filling throughout. It is necessary that the matrix be held firmly against the tooth at the gingival margin of cavity.

62. Dr. C. O. Lovitt, LaHarpe. Veneer gold inlays. To make

veneer inlay requires the same procedure as for an ordinary inlay. Take impression and then trim off wax about thickness of blotting paper where you want gold to show. Cast this in white metal, replace in cavity and build up with wax and cast with gold. The gold will adhere to white metal wherever it comes in contact. This inlay will have same appearance as one made entirely of gold, with only about one-eighth the amount of gold used in the all-gold inlay.

63. Dr. Geo. E. Brown, Chicago. Orthodontia wrench, direct and reverse acting. This wrench was devised for the purpose of placing nuts on the posterior ends of alignment wires and traction screws and for tightening the nuts following the use of the head gear in cases of retraction. The double end of wrench was designed for the purpose of tightening the lingual clamp band nuts. The main feature of this clinic was in showing the ease and rapidity with which these nuts could be placed on the posterior ends of arch wire and traction screws, distal to the clamp band tubes, by the use of this wrench.

64. Dr. H. W. McMillan, Roseville. Demonstrating the superiority of natural over artificial teeth, using the gnathodynamometer. Of natural teeth bites were tested as follows:

26 on incisor bite, lowest 30 lbs.; average, 60 lbs.; highest, 166 lbs.

25 on bicuspid bite, lowest 55 lbs.; average, 123 lbs.; highest, 220 lbs.

33 on molar bite, lowest 80 lbs.; average, 150 lbs.; highest, 250 lbs.

35 tested, aged as follows: Youngest, 24 years; average, 41 years; oldest, 63 years.

Tested on incisor porcelain jacket crown stood 40 lbs. pressure. Tested one case of full upper and lower artificial teeth. Molar pressure, 24 lbs.; bicuspid pressure, 30 lbs. A cuspid tooth was broken off at the pins in the latter test. The gnathodynamometer used was kindly loaned to me for this demonstration by Dr. G. V. Black of Chicago. Dr. Black says the gnathodynamometer should be in every dental office. Manufactured in sufficient quantities, they need not be expensive.

65. Dr. Wm. Mullin, Chicago. Something pertaining to gold inlays. The use of fine mechanical saws, such as used in vulcanite work as a means of handling wax inlay, after it has been carved.

polished and ready to take out of cavity. Take a piece of saw three-quarters inch in length in fingers. Heat in lamp and carry to inlay. The wax flows around the teeth of saw, giving it a retention which gives you absolute control of inlay. The piece of saw may not be where you wish to attach the sprue; so take another piece of saw, heat and stick into inlay where you wish to attach sprue. With hot pliers remove the saw not in use after the one in use is dropped into a hollow sprue, manufactured out of an old hyperdermic point. The barrel of an old metal syringe can be used to remove sprue from investments. In this method the wax inlay is handled easily and quickly without coming in contact with the hands.

74. Dr. L. P. Davis, Lincoln, Neb. Carved cusps in mettaline compound. Prepare root and fit band in usual way; trim band a little short of occlusion. Soften one end of stick of mettaline compound over dry heat, pinch off sufficient for cusp and knead well between index finger and thumb. While soft, place on band in mouth and have patient close the mouth. While in this position harden with stream of cold water. Then remove band and mettaline intact, proceed to carve. Remove mettaline cusp from band, on piece of sandpaper, rub portion extending in band backward and forward until band line is eliminated. Now paint mettaline cusp with glycerine, place on slab with rubber ring surrounding, hold cusp in place with exploring instrument, pour Mellott metal, cool and with small instrument remove mettaline cusp. Swage, using pine stick and unvulcanized rubber; remove cusp, fill with 22-carat solder, rub on flat file to give level surface. It will now fit in place perfectly. By this process the operation is shortened and there is no change in the original carving.

75. Dr. O. L. Bandy, LaSalle. Vulcanite rubber inlays. Showed a number of vulcanite rubber inlays. A material that will conform more nearly to color of natural teeth. Rubber being one of the best non-conductors, teeth so filled are less liable to become troublesome from thermal changes.

REPORT OF COMMITTEE ON NECROLOGY.

To the President and Members of the Illinois State Dental Society:

So far as is known to your committee, but four active members of this society have been taken from among us by death during the past year, including one life member, as against eleven last year, including seven life members.

When month after month of the year 1907 passed by without a single death to its credit, hope gradually took shape and form, that, perhaps, for once, the society might be spared its annual contribution to the grim reaper.

At the opening of the present year, however, this hope was dissipated with the announcement of the death of Dr. W. A. Bradley of Morrison, at Clinton, Iowa, followed in rapid succession by those of Drs. Harvey Edgar Harrison, January 23; Henry Emerson MacDonald, February 2; and Charles F. Matteson, February 2, all of Chicago.

Of these, Drs. Bradley, Harrison and MacDonald, by reason of their quite recent affiliation with the State Society, had not yet had opportunity to impress themselves upon its work or prove themselves as society members, but from their works, their industry and their ability, as attested by those associated with them, the belief is amply justified that this society has lost in them most valuable material. Some of these had only so recently entered into the practice of dentistry that they had scarcely had time to become interested in society work, while others, who had been in practice longer, had not yet, in this respect at least, lived up to their full measure of usefulness, and it can only be a source of regret that having at length realized membership in their State Society, they should have been cut off so soon.

To many of the later members of this society, the name of Dr. Charles F. Matteson will evoke but passing interest, but to the older members, the mention of his name will at once call up most pleasant memories associated with the handsome features and debonair personality of "Charley" Matteson, and the announcement of his death will be received with a genuine pang of regret, tempered, however, by the knowledge that, after years of intense suffering, his final discharge came as a most blessed relief.

Born near Rome, New York, at the tender age of two he was brought to Illinois, where, growing to manhood, the call for volunteers, at the breaking out of the Civil War, found him eager and ready to enlist. He was mustered in as a private in Company E, Seventeenth Illinois Volunteer Infantry, and his country enlisted no more loyal, faithful and devoted a soldier than he.

His record is one long list of battles fought, arduous services rendered and important positions filled, extending from the beginning as a private through to the very end of the war, when he was mustered out with the rank of captain.

Twice wounded in the numerous, and some of them bloody, engagements in which he participated, his escape from death through all his strenuous and active career can only be attributed to the favor of a Divine Providence.

During all the trying and responsible duties that fell to his lot, he always rose to the occasion, and so performed them as to command the respect and commendation of those about him.

At the close of the war he began the study of dentistry with his brother, Dr. A. E. Matteson, who is still with us, an honored member of this society, and engaged in practice at Kewanee, but after a few years moved to Chicago, where he remained until his death.

Although not incapacitated by the hardships of his army experience, nevertheless the seeds of physical weakness were doubtless there implanted, which, with advancing years, developed to such an extent that he was compelled to retire from active practice about ten years ago, when he was appointed Curator of Memorial Hall G. A. R., Chicago, for which he was eminently qualified, but after a few years. increasing physical infirmities compelled him to resign, when he made his home with his brother, Dr. A. E. Matteson, where all that the most affectionate and unremitting attention could suggest was done to mitigate his suffering, and to comfort his declining years.

Before he was incapacitated by failing health, Charley Matteson was a welcome and frequent attendant at the meetings of this society. Though not so active with pen or tongue as many others, his genial manners, his uniform courtesy, his keen sense of humor, his never failing fund of anecdotes and shrewd practical sense, contributed much to the pleasure and interest of the meetings, both in and out of session.

Although his seat has been vacant since the session at Chicago in 1899, he is still held in affectionate remembrance by all who had the pleasure of associating with him here, and their prayer is that the peace and rest which were denied him in his last years may be his portion now.

In 1886, at the twenty-second annual meeting at Rock Island, this society did itself the honor to elect to honorary membership one who, even at that early date, had, by reason of his attainments and his works, achieved the highest eminence in his profession.

In the succeeding years the untiring industry of the man, the ever broadening grasp of his mind, and the ever increasing importance of his achievements, soon made Willoughby Dayton Miller easily one of the foremost and most brilliant figures in the profession.

Just at the very prime of life, with honors and opportunities crowding thick upon him, it seemed as though the keys to many scientific problems were almost within his grasp, and that a long life full of fame and honors to himself and benefit to mankind and glory to his profession lay before him.

Suddenly, without warning, came the stroke that at once cut short this most promising career, when, on the 27th of last July, he died at Newark, Ohio, of heart failure, following an operation for appendicitis.

So distinguished have been his services, so brilliant his achievements, such lustre has he reflected on dentistry, and so immeasurable is the loss that it would seem to be eminently fitting that this society should take special notice of an event of such moment to the profession. Your committee would therefore suggest the appointment of a special committee for this purpose.

C. B. Rohland,
J. E. Adams,
S. A. Campbell,
Committee.

[In response to the suggestion of the committee and the request of the society, Dr. G. V. Black prepared the following account of Dr. Miller's work.—Ed.]

The Illinois State Dental Society has asked that I add additional word to the report of the Committee on Necrology regarding our lamented friend and co-worker, Dr. Miller. Anything possible to be said will seem much too trivial for the man and the occasion.

Dr. Willoughby Dayton Miller was much more than an ordinary writer on dental subjects. He was, by his mental aptitudes and by education, a scientist of high order. His work for the most part was in the lines of pathology and in the development of facts in science relating to that subject that were previously unknown.

When he had finished his medical studies in the University of Berlin, he went at once into the laboratory in charge of the celebrated Dr. Koch to perfect himself in the then recent developments in the study of bateriology, the newer features of which, especially the cultivation on semi-solid media by which varieties of micro-organisms were readily separated for study, were at that time arousing world-wide interest. When he had mastered this and was fully prepared for independent research work, he began the separation and individual study of the various micro-organisms found in the human mouth. From that he proceeded to the study of dental caries and the relation of micro-organisms to that process. While it had been definitely known for some years that micro-organisms were always present in carious dentin, their relation to that disease was unknown. It was this relation, whether passive and accidental, or whether fundamental and causative, that was to be made out. This was done in its completeness so far as this process related to caries of dentin. It was a study of the physiological processes of the organisms found, the chemical changes produced in the material in which they grew, by their life processes and the action of these upon the tissues of the teeth. All of these were definitely made out and determined so perfectly in this one series of experimental studies that the twenty-four years of study and careful scrutiny which have been given to the subject since, has only served to show the absolute care and correctness with which all of the principal facts had been made out. So much as this cannot be said of any other single piece of research work of similar magnitude, or of similar importance to men. This work was given to the profession in language so straightforward and so simple, and yet so complete, that all who were sufficiently acquainted with the general subject to accurately follow the thought, understood and could repeat the scientific laboratory processes and verify the conclusions. This required some time. But as it was done by one person and another and found correct, the name of Dr. W. D. Miller became known as a most careful and conscientious observer wherever dental subjects were studied. It is to this work that we all turn for the basic facts of the pathology of dental caries. It has proven the finest specimen of pathological investigation ever produced. This piece of work alone was sufficient to establish Dr. Miller's reputation as a scientist of the highest order.

But while future generations will regard this as his greatest achievement, it is only one of the many great things he has done for the benefit of men. The twenty-three years that were given him of life after this work was done were busy years and rich in accomplishments which will make his memory dearer and dearer as time goes on and as his work becomes better known. This work he continued with unabated zeal to within a few days of his death and much that had been planned for the future was left undone.

Though Dr. Miller's life was devoted to scientific work for the development of his chosen profession, he did not forget nor neglect his personal duties to his family or to society. He was much in social work. He was always ready and earnest in defense of that which he thought right, either in professional or social life. In this he had the happy faculty of expressing his views forcibly in sentences framed as not to offend a sensitive opponent. As a man among men, he was universally loved by those who knew him well.

G. V. BLACK.

AMERICAN DENTAL SOCIETY OF EUROPE. LONDON MEETING, 1908.

DISCUSSION OF DR. HIRSCHFELD'S PAPER ON "A STUDY OF THE TREATMENT OF PULPLESS TEETH."

DR. G. C. DABOLL, Paris,

Said there was very little difficulty in immediately filling a tooth from which had been removed a pulp showing no sign of irritation or inflammation, and very little danger afterwards of inflammation supervening. Pulps which were only partially dead required a great deal of treatment in order to make the canals thoroughly aseptic. The great thing was to keep the tooth dry from the beginning to the end of the treatment; not a drop of moisture should be allowed to enter the pulp canal or the cavity of the tooth. Where that care was taken success was assured. In connection with molars, as a general rule there was very little difficulty with the lingual root, but with the buccal roots, especially in people of middle or advanced age, there was sometimes no possibility of entering the roots to any extent. With regard to drilling out the roots, he rarely went beyond the point of enlarging the openings of the canals in order to get more freedom in going as far as possible, but his experience was that they were so infinitesimal in size that when they were thoroughly disinfected there was rarely any trouble with them afterwards. It was very nice to talk about going to the apex of the root and cleaning it out thoroughly;

that was feasible where there was sufficient room. In most cases it was a simple matter for an experienced man to remove the pulp, disinfect and fill the tooth. It did not matter much how carefully the tooth was treated, how much time a man might have devoted to it, there was always a liability of trouble occurring. The patient might find no discomfort for five or even ten years, and then all at once trouble would supervene. He never allowed a patient to go away without impressing upon him the importance of applying ice the moment he felt any tenderness in closing the teeth together. When there was congestion of the membrane and the tooth was raised in its socket, the moment that occurred the patient should get a piece of ice the size of an orange, put it in a towel, and hold it to the face until he really was attacked with faceache, and in about an hour the congestion was relieved. That had been done in hundreds of cases and he had not known of any failure. In one case he had some difficulty in getting into the roots of a lower third molar which the patient wished to save. He treated the tooth for a week or ten days, and, having filled it, informed the patient that if the tooth gave any trouble ice should be immediately applied. In three or fours days the lady came back with the tooth so sore that she could not close her teeth together, and she informed him that she had put the ice on until she could bear it no longer. He showed her how the ice should be used and she kept the ice to her face for ten hours and the tooth became all right again. It was in fact almost an infallible remedy. The rationale was very simple: Reducing the temperature contracted the blood vessels and drove the blood away and relieved the congestion.

Dr. H. S. Schaffner, Florence,

Referring to Dr. Hirschfeld's remarks in connection with cleansing the root canals, said that some ten years ago he read a paper to the society on the cleansing of the canals and spoke of special instruments. He did not show the instruments at that time, but in the meantime he had been trying several instruments that had been described at various times and had come to the conclusion that they were not of the character desired. The instrument required was one that would adapt itself to the curvatures of the root. The Donaldson broach, No. 5, had a long shaft which might be attached to any handle, but he did not consider a long shaft an advantage. It had the defect of giving a bend, which might be convenient at times, but it did not readily adapt itself to the sense of touch. A perfectly straight broach was required with the pressure applied on the axis of the broach itself. The handle should be practically featherweight and have a long leverage for working in the posterior teeth. A rigid handle in a straight broach allowed one to feel exactly what branch of the root the instrument was in, whether by measurement or by touch. He exhibited some instruments made of steel piano wire filed to a taper and a holder that enabled the broach to be immediately changed, as he had found that an instrument suitable for one root was not suitable for another.

Dr. N. S. Jenkins, Paris,

Said there was only one point he ventured to take exception to in the admirable and important paper. If he understood Dr. Hirschfeld aright, he spoke disparagingly of reaming or drilling out the roots under treatment. There were circumstances, however, where such action was of very great importance. There were no micro-organisms more virulent than those which were connected with diseased bone. Hume and Arkovy in their experiments had shown that the bacillus gangrenous had not only the power of causing gangrene of the pulp but also of penetrating and destroying the dentin even with an alkaline medium. That was a very important point. The tubuli of the root were often permeated by pernicious micro-organisms, the destruction of which was imperative if there was to be a continuously healthy condition in the root, and for that purpose it was most desirable at times not only to drill out such canals but to drill them out considerably. In so doing the diseased bone was removed and it was possible to make use of a disinfecting agent in sufficiently large doses. Even the modern coal tar derivatives, such as creasol, etc., powerful as they were, were often required in very considerable bulk in order to obtain rapid and complete disinfection, and certainly in those cases drilling out the root seems a matter of very great importance.

Dr. Daboll, Paris,

Agreed with Dr. Jenkins, and complained of the inadequacy of the instruments used for enlarging root canals. It was a simple matter where direct access could be obtained with a straight drill, but in the anterior roots of lower molars, where there were two canals and one had to enter at a right angle, a drill was supplied which was about 1¼ inches in length and it was impossible to get that drill at the angle necessary to get into the opening of the pulp canal and drill out with any certainty. He had been thinking of writing to the manufacturers, asking them to make right angle drills about half or one-third of the length of the shaft of the drill. Even when he had been able to get the mouth wide enough open to get the drill into position the point of the drill was so far from the motive power that it was difficult to control it, whereas with a shorter drill the control would be much more certain and effective.

DR. KELSEY, Marseilles,
Referred to the advantage of the Beutelrock drills made in Munich, ¾ inch, right angle drills.

DR. G. B. HAYES, Paris,
Was disposed to believe in the remark once made that more than one-half of the pulp canals treated became well in spite of the treatment and not from it. Some of the pulps extracted made him wonder how they had stayed in the tooth as long as they had. With regard to drilling out, his personal experience led him to think that in certain cases, where it was possible and feasible, it was a wise procedure. In cases where it was not possible he relied upon thorough desiccation and flooding the canal with formal and vaporizing the formal with hot silver or copper wire. It was the vapor of formal that disinfected; where it was not possible to get at the pulp to remove it thoroughly it was necessary to depend upon the permeation of the disinfectant, and he found the vaporization from formal succeeded as well as anything he had tried. Filling the canal with a solution of formaldehyde, vaporizing it, and drying, was a very great advantage.

DR. CHARLES MONK, Wiesbaden,
Endorsed the remarks of Dr. Hayes with regard to treating by the vaporization of formaldehyde. He had almost given up enlarging the roots with broaches as he had found a difficulty in knowing how far he was going. The great difficulty lay in the fact that with the broach there would be certainly a little bur or shoulder, past which one would not be able to penetrate and one then lost track of the depth of the root.

DR. W. M. COOPER, Frankfurt,
Said, instead of using a little handle he had had a great deal of success in instructing his assistant to soft-solder on old instruments of different angles. Such instruments were always in the drawer, disinfected, and were very easily applied.

Dr. Hirschfeld,

In reply, felt gratified at having elicited so good a discussion upon his paper. It seemed to him that the most interesting point was whether open roots should be drilled or not. A great difference had to be made between opening sound roots and putrescent roots. Everyone was against taking out healthy pulps by means of drills, but the drilling out of putrescent pulps was a question that might be considerably discussed. He felt like Dr. Jenkins with regard to dealing with infected tubuli, but he should use Dr. Jenkins' method only after having taken care of the apex. He first treated the root and then filled the apex, drilling out as much as possible, and then there was no possibility of infection going through the apex. Sometimes he might go even beyond the apex in order to be sure that nothing in the infected part of the root was left against the foramen. The broaches recommended by Dr. Schaffner seemed most suitable and he had to apologize for not mentioning them in the paper. He thanked Dr. Daboll for his suggestion in regard to the ice, which he believed would be a good thing in removing the commencement of pericementitis. Whatever was done inside a pulp canal in the way of drilling, it should not be forgotten that it was quite possible to produce a shoulder, and if there was anything in the way of a shoulder in the pulp canals, the root if not partially lost was very much endangered, and that was a good reason for avoiding drills.

DISCUSSION OF DR. JENKINS' PAPER, "A DENTAL CONTRIBUTION TO PREVENTIVE MEDICINE."

Dr. Isaac Davenport, Paris,

Said that in Kolynos Dr. Jenkins seemed to have combined in a most happy manner an effective antiseptic and mild abradant, which encouraged efficient brushing of the teeth and at the same time disabled the comparatively small number of bacteria which remained after its use. A few diphtheretic germs could secrete enough poison to kill, and innocent germs might become virulent if they found in the mouth proper environment for development. The harmless micrococcus might become the cause of fatal pneumonia, and it was amazing to consider the number of germs on the mucous membrane of the mouth which might cause such local infections as pyorrhea, ulceration, abscesses, and general blood poisoning, or diseases such as tuberculosis. Physicians were slow to realize the importance of attending to the mouths of patients even during protracted illnesses, but many now recognized the danger to life when the mouth was a storehouse of infection, and therefore they employed the necessary hygienic measures. Perhaps one word of caution might be uttered. He had very often found in practice that when patients believed they were using a highly antiseptic dentifrice their teeth were very badly cared for and their mouths were loaded with food debris and swarming with micro-organisms. They had been content to depend too much upon the remedy which they thought relieved them of the responsibility and trouble of mechanically cleaning their teeth, an operation which was somewhat irksome to most people. He mentioned that only to show the need of impressing upon patients the great importance of mechanical methods of dental hygiene. Dr. Jenkins certainly opened up a broader and more comprehensive field in oral hygiene than the mere prevention of dental caries, placing dentistry again, as it had been often before placed, in the advanced line, hand in hand with general medicine, in the prevention and cure of disease.

Dr. G. C. Daboll, Paris,

Said he had had placed in his hands by Dr. Jenkins some of the preparation with the request that he would use it and give his impressions. He had been using it personally and found that not only was it a very gratifying dentifrice or material for cleansing the teeth, a very important fact, especially with the feminine portion of a dentist's clientéle, but he found it also to be a very efficient antiseptic mouth preparation. Those patients to whom he had given Kolynos had not yet all reported, but in his own case he found it very efficacious, especially as he was suffering from a tendency to that trouble which many people suffered from, pyorrhea. It was an excellent preparation in every way.

Dr. William Hirschfeld, Paris,

Said the last time he had had the privilege of listening to Dr. Miller in public was at the joint meeting in Paris, when he spoke of abrasion being caused by the constant use of tooth powder. That statement Dr. Miller put forward as the result of his scientific investigations and experience. As could be easily imagined, the new discovery made a great impression upon the audience, as dentists had never thought of recommending anything but powder to their patients. At the time he had intended to ask Dr. Miller what he considered the best preparation to use and was only prevented from doing so by a discussion on some scientific point which took up the rest of the evening. He really believed that if Dr. Miller had been present this afternoon to hear Dr. Jenkins' paper he would rise from his seat and say, "The principles which you have carried out in the composition of your preparation are principles which I have always personally believed in." It was perhaps somewhat presumptuous on his part for him to say that in Dr. Miller's name, but he might be excused as it was really the result of his own personal experience with regard to the efficacy of the preparation. In Dr. Jenkins' view the dentifrice was not only harmless and effective and agreeable, but actually prevented the ravages of the micro-organisms of the mouth. Personally he had only been using the paste for about two months and the time that had elapsed was too short to form any conclusive view on the subject, but he felt sure it possessed an extraordinary action on the gum tissues. His gums were inclined to pyorrhea and he was delighted to notice that with Kolynos that disposition had diminished greatly. He had given the preparation to several of his patients and had always had the same remark made to him, that after two or three weeks of uninterrupted use the gums presented a more healthy and firmer appearance than before, although the patient had been using perhaps for the last twenty years the preparation which he had himself been in the habit of recommending. Fortunately with the average clean patient inflammation and pyorrhetic gums were the exception. The principal requirement in oral hygiene was to keep the teeth clean without injuring them by the cleansing process, and he thought Dr. Jenkins' discovery was the very thing needed. The result of its use were teeth not only perfectly clean, but with that peculiar translucency which seemed to be the privilege of good American patients. Another advantage of the paste was it agreeable flavor. There was an extraordinary refreshing taste following its use, so much so that it was a pleasure to use it both morning and night, and that observation was confirmed by every patient to whom he gave the preparation. In conclusion, he wished to say that the dentifrice had been presented to the profession by a man noted for his conscientiousness. Whatever Dr. Jenkins recommended was the fruit of serious hard labor, the result of scientific experimentation. When a product of Dr. Jenkins' passionate devotion to the profession was placed before them they could only accept it as a benefit to their patients and to themselves.

Dr. George B. Hayes, Paris,

Considered it a pleasure and a privilege to listen to anything that Dr. Jenkins brought before the Society. Dr. Jenkins had made himself immortal as a dentist by his work in restorative dentistry, in helping dentists to bring back to their original form and usefulness teeth that had been broken down and had suffered through decay and abrasion. But to prevent was far better than to cure, and it seemed to him that Dr. Jenkins had entered upon a new field which had far greater possibilities than anything he had yet undertaken. To cure cases of pyorrhea was a great achievement, but to prevent it a far greater. The question of cleaning the teeth and disinfecting the mouth was one which must in the future be to dentists a source of study and of constant effort and labor. That led to the consideration of a very large question and one that had interested him for some time. His observations and studies had not yet reached a stage where he could give any definite results of his own work, but the question of the care of the oral cavity divided itself into two distinct parts, the mechanical and the chemical. The mechanical consisted in rubbing or disintegrating and removing the deposits formed on the teeth and the chemical the destruction of germs in connection with the soft tissues of the mouth. In considering cleansing and disinfecting, attention had to be given to the fact that the hard teeth were surrounded by soft tissues and the cleansing and disinfecting of the teeth must be carried out without risk of injuring or impairing these soft tissues. Also the mechanical cleansing must be done in a way that, while cleansing the teeth, did not wear them. The question of brushing was one that he had not solved. The teeth were cleaned in places by mastication, where they were exposed to friction. Around the gums and between the teeth they were not clean, and to clean such places by mechanical friction was practically impossible without abrading the parts already cleansed, and that was a question that had yet to be solved. To put any kind of powder on a tooth brush and apply it to the teeth by friction was not reasonable. In attempting to clean in such a way the most accessible parts, the parts already cleaned, were bound to be abraded. Chalk quickly took out the scratches caused by pumice, and consideration had to be given to the time taken by chalk alone to wear away the teeth of patients who brushed regularly three times a day. There were patients who, by excess of zeal, with chalk alone, would wear away their teeth, although chalk alone used twice a day in most cases would not be very dangerous. The idea was to remove every deposit on the teeth without going further. If patients came before the dentist with the teeth perfectly clean, was it possible for anyone to say that they had not overdone it? If there was a slight deposit on the teeth it might be possible to say that the friction had not been overdone, but if the teeth were absolutely clean it was hardly possible to say that the friction was not more than necessary to make the teeth perfectly clean. It required time to find out whether any preparation was doing its work efficiently or not and in that connection he was not yet ready to give any result with regard to the use of Kolynos. With reference to the stimulation of the gums and cleansing of the mouth, that seemed very effectively carried out by Dr. Jenkins' preparation. For the majority of cases he believed Kolynos had succeeded in keeping the teeth clean without overdoing it; if so, it was a thing to be heartily welcomed by all. He had been using it for a month three times a day and two minutes at a time and could keep his teeth perfectly clean, and there was a comfortable and agreeable feeling about them which led him to wonder whether he was not overdoing it, whether the combinations which went to form the paste were not more than sufficient to keep the teeth clean. As to its effect in pyorrhea, it would take time to determine. He objected personally to any powder of whatever kind or nature which might lodge in the pockets or around the necks of teeth; it seemed to him to be more or less of an irritant. Perhaps Kolynos without the chalk might be less liable to cause trouble in pyorrhea. He desired to know whether in cases of pyorrhea the manner of brushing, massage, and friction combined with disinfection, was not more conducive to better results than simple disinfection alone. It seemed to him that the massage and the manner of brushing were perhaps of more importance than the disinfecting. For over two years he had neither used nor recommended tooth powder, but only soap, and he had experimented with a certain method of brushing. He tried to get his patients to look at their teeth and keep track of what they were doing and advised them to use a hand-glass and examine their teeth after brushing to see that they were properly clean. Soap alone was not sufficiently abrasive to keep the teeth perfectly clean; there was a hard, thin deposit of tartar on the lingual and buccal surfaces. He had been trying to get patients to use a pointed orange wood stick with powder to remove such deposits, and in that way they were able to use sufficient friction to remove the deposit without abrading the teeth. He thought the preparation of Dr. Jenkins would not prove abrasive in most cases and its disinfecting properties would be highly beneficial without injuring the soft tissues.

Dr. A. N. Davis, Berlin,

Said he had read a similar paper which advised the use of fine pumice stone for cleaning the teeth. The reader of the paper said he had taken natural teeth and applied pumice stone to them by the aid of an electromotor and had found that with the amount of friction exerted upon the enamel of the teeth equivalent to about ten years of brushing with a tooth brush all that could be observed was that the enamel was simply polished. Having confidence in the lecturer he himself used a mixture of powdered pumice stone and chalk for about six years, with the result that he brushed the enamel completely off six of his teeth and in two or three other teeth formed slight grooves. At the time that Professor Miller brought out his article on abrasion through tooth powders he spoke to him about the condition of his own teeth, and Dr. Miller examined him and said that he had undoubtedly done a great deal of harm by using the tooth powder. Dr. Miller asked him to allow him to see patients and on two or three occasions examined several interesting cases. One was a young lady who had been in the habit of sucking lemons all her life, and on the lateral and cuspid she had deep grooves in the teeth near the gum. Professor Miller thought those grooves were undoubtedly caused by the tooth powder. In questioning a number of patients in whose teeth deep grooves had been formed he found they had been in the habit of using prepared chalk and champhor for a number of years, some patients as long as thirty or thirty-five years, with the result that the enamel, particularly of the anterior teeth, was completely destroyed. Professor Miller said he had been unable to find the proper kind of chalk which would not scratch glass. By rubbing over glass with chalk he had been able with a magnifying glass to detect scratches, although the chalk was the finest he could obtain. Professor Miller wrote a prescription for him which he said would do the teeth no harm, no matter how often it was used, the prescription containing 50 per cent of chalk and 50 per cent of magnesia. That was advised at about 2 o'clock in the afternoon, and about 5 o'clock Professor Miller came along and said the prescription must be changed, that no chalk should be used, but simply magnesia. By the use of magnesia, according to Dr. Miller, a great benefit would be conferred upon the patients and no harm to the teeth would result. He should like to know whether Dr. Jenkins used prepared chalk in his tooth paste or magnesia.

Dr. C. E. Luce, Stuttgart,
Thought the profession were under a great debt of gratitude to Dr. Jenkins and desired to know the effect of Kolynos in those very destructive conditions of the mouth, such as leucoplakia, which was incurable. It was very often found in the mouths of smokers, where the mucous membrane became white. If it would help in such cases it would be a veritable Godsend.

Dr. H. E. Hosley, Springfield, Mass.,
Considered it a very great honor to have listened to such an important paper and believed it was the forerunner of a new department in dentistry. He was of opinion it would lead to work which would place dentistry upon a new pedestal, and he congratulated Dr. Jenkins upon his work. The profession sorely needed a preparation of such a character. His experience with it so far had been limited, but he had found it very beneficial and it was bound to be a tremendous help to every patient, especially to the poor class of people who were not able to afford the regular services of a dental surgeon. Dr. Jenkins spoke of bacteriology being the key to the situation, and that was a very sound expression of the facts. One remark of great assistance to the younger men Dr. Jenkins had made was that great dependence had to be placed upon the professional bacteriologist. In a very crude way he himself had tried to do some work in bacteriology and the more he tried the less he found he knew about it, but on consulting an expert he had been helped considerably. Up to the present time the dental profession had spent a great deal of time in perfecting their mechanical work, but now Dr. Jenkins and others were taking the profession into larger and wider fields, and dentistry in the future would become one of the absolute necessities of life. The thoughts of a man like Dr. Jenkins had a powerful effect upon the whole profession and through the profession upon the whole world. Dr. Jenkins spoke of the resistant power of the tissues. He believed that Nature would take care of herself and that was the one thing in the few experiments with

Kolynos he had made that had pleased him immensely; it seemed to help Nature just to rise to the position in which she could take care of herself. Nature could do the work, but many times she needed help. He had suggested to a number of physicians the boon which Kolynos would be to a sickroom, to the patients who could not clean their teeth. He was not prepared to say that Kolynos did all that was wished, but he was prepared to say it would do more than had been up to the present time demonstrated. Its use in the sickroom opened up vast possibilities. Prevention was a matter that was being very carefully studied and in the course of that study great attention was being paid to the conditions of the mouth, especially in connection with tuberculous disease. Attacking the bacteria was an important matter, especially in getting through the envelope of the germ. It was his belief that with very few exceptions the great bulk of so-called mouth washes never once penetrated the envelope, and if they did not do so they did no good. The prevention of contagion through the mouth was a matter for the dental surgeon to deal with and he believed a paper such as Dr. Jenkins' was a step in the right direction, and he congratulated the Society in having one as a member who could present such an able paper and a member to whom the whole profession looked up to with honor.

Dr. A. Chiavaro, Rome,

Said two points had struck him in the paper: first, how to use Kolynos or any other preventive, and, secondly, when. He had always prescribed a dental tooth powder recommended by Professor Miller, a powder with precipitated chalk, salicylic acid, saccharine, and a little oil of peppermint or other oil. Then came the question, how to use it. After some years of experience he advised his patients, after charging the tooth brush, to begin with the lingual surfaces of the anterior teeth and afterwards the buccal surfaces of the molars, and then the upper and lower front teeth. After that they were to use some silk charged with a paste made from the same tooth powder. That method was recommended to avoid the friction arising from beginning with the upper lateral teeth after charging the tooth brush. With regard to the question of when, he had always said, Clean the teeth every time anything had been eaten. He had had a little experience lately which might be interesting. Some ladies who had never taken five o'clock tea went from one house to another for a year indulging in that luxury and after the year he found three of them had erosions on the marginal surfaces of the teeth, resulting, he believed, from the fact that after the tea they did not clean their teeth. He advised them to do without cakes, to take only the tea, and to ask for a little water afterwards to rinse the mouth. He thought Dr. Jenkins should issue instructions as to how and when Kolynos was to be used.

THE PRESIDENT

Said he had used Kolynos and liked it, but with regard to its merits he was afraid it was impossible for him to speak. An interesting point had been raised by Dr. Chiavaro with regard to brushing the teeth. Brushing of the teeth was very often the cause of the cavities found at the cervical margins, a great deal more indeed than afternoon tea and more than powder or anything else—the position of the brush was of the greatest importance. The person who brushed the teeth across with the edges of the bristles striking on the union between the cementum and enamel was sure to get that trouble, but if the brushing was done with a simple rotary motion the trouble would be avoided. It had been said that the tooth brush must be looked upon as a collection of tooth picks, and in so far as those tooth picks passed between the teeth so would be the effectiveness of the brushing. In order to brush in that way the brush should not go backwards and forwards across the teeth. Proper brushing required only a minimum amount of movement of the hand, and by that method of rotary motion he could clean molars which it was almost impossible to clean in any other way.

DR. N. S. JENKINS, Paris,

In reply, thanked the members for the kind way in which they had spoken of him and his modest work. It was praise which he very little deserved, but it had been given to him so fully that it placed him in a very embarrassing position. No man did anything in the world by himself; he was but the receptacle of the work of others. Had it not been for Miller and others his own work would have been fruitless for a long time to come. The inspiration came from Miller and had Miller been spared the work would have been more quickly accomplished, as Miller and himself would doubtless have worked on it together. In reply to the remarks that had been made, Dr. Davenport was quite correct in his warning not to depend too much on the use and influence of a disinfectant. There was very much to be done in the human mouth which could be only done by the intelligent dentist. The preparation would not accomplish miracles. It was the skilled touch, the careful observation and delicate judgment of the dentist by which alone it was possible to preserve the healthful condition of the human mouth. With regard to the use of chalk, there was a very great choice of chalks, even of precipitated chalks. Although it was ordinarily prepared with very great care, yet for the purposes of manufacture it was essential to examine every package of chalk and to make sure it was of the most perfect quality. He would not use prepared chalk because it contained a very considerable quantity of sharp grit; it was only precipitated chalk that could be used. He did not make use of magnesia because it was unnecessary. It was his intention to use only those agents which were absolutely indispensable, or which had a very definite and positive value, excluding everything that was not absolutely required. As to the important question of the resistance of tissue, he had not time to go into it, but it was one of the most important objects he had in view, to find a preparation which should chiefly be an agent for destroying and removing micro-organisms and their products from the mouth without in any way abraiding or chemically affecting the tissues of the mouth. It was his conviction that it had been obtained, for he had repeated with great care the experiments of Miller and had found they were entirely borne out in regard to the abrasive action of pastes which contained finely powdered silicates or cuttlefish or pumice or anything of that nature, and that the only materials which would cleanse without injury were those he had mentioned. With regard to the tubercle bacillus the envelope was composed largely of fat and a wax-like substance, and was therefore destroyed with a tolerable readiness in the mouth. The envelope was not so resistant as that of many other micro-organisms. The bacillus was found very largely in cavities of decay in the teeth and elsewhere in the mouth, but it was now very largely believed that the chief source of infection was intestinal. A former belief of pulmonary tuberculosis being caused by inhalation was subject to question and recent researches had led many investigators to believe that the great danger is through intestinal infection and it was therefore from that standpoint that hygienic treatment of the mouth was of such extreme importance.

WISCONSIN STATE DENTAL SOCIETY 38TH ANNUAL MEETING AT LA CROSSE, JULY 21, 22, 23, 1908.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

DR. B. G. MAERCKLEIN, Milwaukee:

The review of the history of this Society brings back to my mind much of the work that has been done by this body. I regret that one of the members living in Milwaukee, Dr. Holbrook, is not present with us and able to respond to the President's address. So far as I know, I believe there are only two members living at the present time of the original incorporators of this Society; those are Dr. Arthur Holbrook and Dr. Palmer, now in California.

PRESIDENT W. H. CUDWORTH:

Dr. Stewart of Madison was one of that body.

DR. B. G. MAERCKLEIN:

He is dead. A large amount of this work, as you can see, was outlined and planned by those pioneers of that period. We all appreciate the courage and enthusiasm that it must have taken for them to branch out, you might say, in the wilderness, to form auxiliary societies, when it was almost impossible to maintain the original or maternal society itself.

I have attended the meetings, I believe without exception when we have had meetings, since 1874, and I know a little of the history of this Society. I skipped once in 1876, and one last year, when we had really no meetings. I can remember some of the demonstrations given, and they were discussed with a fervor very seldom equaled at the present day. I can distinctly remember a demonstration of the "Rubber Coffer-Dam" as it was called, and the arguments brought against its use, and some of them correctly so, because there was only one hole punctured in the rubber-dam at that time, and the rubber adjoining the tooth was always in the way. Dr. Webb in 1875, in the Newhall House made the proper demonstration by puncturing three or four holes, giving the teeth to be operated on a clear and perfect exposure. That was one of the revelations, you may say, to the dentists of this state; and from that time forth good operative dentistry had its birth here.

Also a demonstration of the electrical mallet, or any mallet so far as mallets were concerned; he was the first one to make a successful demonstration of it. I had the honor and pleasure and benefit of passing the gold for Dr. Webb myself in one of the teeth he filled for Dr. Parker of Elkhorn. The operation lasted five hours. He restored entirely a left lower third molar, with the electric mallet, with cohesive gold. You can see that even at that time we had workers who were earnest, enthusiastic and skilled in their respective specialties.

So far as the Society's condition is concerned, I have for years advocated the enlargement of our membership, and so far we have failed to accomplish the result. We have let down the bars, as they have mentioned it, in regard to ethics and qualifications and everything else; and we have raised the bars in those same branches; and, as Dooley would say, the result is the same. We have failed to enlist the interest of the practitioner at large. Two or three years ago, when we received the aid of Illinois dentists—and we usually received it at most every meeting—it was suggested that we reorganize the Society upon a new basis, making the State Society a sort of parent society, and having local societies with delegates to the State Society, or having every one of them become a member of the State Society. I worked with some of the members on this committee, and the report was handed to you a year ago. Now I hope that we will be able to accomplish this organization without any great disruption of sentiment or feeling, and that we will have local societies established all over the state, and have one general society meeting annually at the place that the executive committee or other members may select. I think in that way we will come in closer contact with one another, and the dentists in their own locality will become a little better acquainted with each other. I think we have an admirable demonstration of that method in Milwaukee at the present time in the "North Side Society." They have drawn a line through the city that they have considered should be the southern limit, and every one who resides or practises north of that limit is eligible to that society; and the change that has taken place among the members in that Society, so far as the individual feeling towards each other is concerned, is remarkable; and the work that they are accomplishing as a young society is remarkable; and the benefit they are deriving from it is certainly worth striving for. I hope we will be able to so frame the by-laws and constitution that at this meeting we may be able to accomplish what the President has suggested, to reorganize the Society upon the new basis, and should it be a failure we can then go back and reorganize it on the old basis.

Dr. E. C. French:

I am not much in sympathy with living in the past. They say when men arrive at the age of 60 they live in the past. It has been my motto all my life to "rush" with the present, and it has kept me busy. I haven't had time to live over my past life. The President's paper, and the remarks by Dr. Maercklein, have called up many early recollections in my practice in the state of Wisconsin. I came to the state in the winter of 1869-70. I had heard of a few of the leading men in the state of Wisconsin before I came here. Such men as Dr. Perkins, Dr. Parish, Dr. Holbrook, and several others were known over on the other side of the Mississippi River, in Iowa. I have a great respect for the reputation that some of the men in the state of Wisconsin had as dentists before I came here. It was my good fortune to meet Dr. Chittenden of Madison, the father of C. C. Chittenden, whom we all loved. There was something in the manner of Dr. Chittenden that was an inspiration to me. A few men, like Dr. Perkins, Dr. Holbrook, and several others I might mention, were my idols. It was my desire and my purpose, if I could, to reach a time when I would stand with them professionally. They were beacon lights. If I allow myself to go back to my experience there are a good many things that might work on my feelings. I see very few here—I do not know of but one, and I am not sure whether he was a member of the Society when I was, and that is Dr. Maercklein. I think I joined the Society before Dr. Maercklein, but I think he had attended the Society before. I know my first desire when I came to this state was to get into this Society; in fact, I joined the State Society of Iowa the year I started in practice, and I have been connected with a society ever since. I got into the Wisconsin State Dental Society just as soon as they would admit me, and I have attended nearly all of the meetings. I can remember the hot discussions we had in the early history of this Society. I want to say that I think that there was a little more enthusiasm then than now. Every man had something to say, and he was ready to say it.

In regard to the rubber-dam I can distinctly remember the first piece of rubber-dam I undertook to adjust. I don't remember whether I punched one hole or two, or didn't punch any, but I know I never undertook to fill a tooth with rubber-dam on with one hole.

If I did, there was two holes mighty quick after I commenced operating. It was a natural suggestion to me that three or four holes in the rubber-dam were better than one. I think I must have joined the Society before we had rubber-dam. What year was it that Dr. Barnam invented it?

Dr. B. G. Maercklein:

1868.

Dr. E. C. French:

I have always thought the rubber-dam was one of the greatest discoveries ever made in the dental profession. But, I am happy to say that we can get along, when we haven't got a very large cavity to fill, without the rubber-dam; we cast the inlay and put it in, and we don't have to use rubber-dam.

But, to turn back to the early history of the Society: I remember how active Dr. Chittenden and Dr. Holbrook were for the success of the Society. I know the difficulties that confronted the Society. There was that old stereotyped argument that a few wanted to run it. We better have a few run a society than not to have any society at all; but I am happy to say that in the State Dental Society of Wisconsin I have never found one man big enough to run the Society. There was too much independence in the Society. We have worked through these years harmoniously, and if there has been any bickering it has only been in localities, and when the boys got together in the State Society they seemed to drop everything and worked for the best interests of the dental profession.

I wish I had time to speak of the individual members, the old wheel-horses. I love them, as I love my own relatives. I know when I was incompetent, when I needed encouragement, and I presented myself before the Society, they all held out the glad hand to me, and gave me support; and all, I might say, that I am is due to the fact that I was encouraged to push myself forward. I want to say this, and I believe my neighbors will say it of me, that the latch string of my office has always been out to anybody. I never have any secrets. If I had anything I thought would benefit anybody else, they were free to have it if I could present it to them in a way that they could understand. I think that should be the aim of every dental society, to encourage the younger men. They have got to take off their coats bye-and-bye. I see some men here today with gray hair; grayer than mine. I can remember them years ago when they were young men and came into the profession. I am not an old man; I am just as young as ever.

I want to compliment the President on his paper. If time would permit him he could have written a much longer paper, and given us statistics, and given us the history of individuals. I tell you if the history of the work that has been done by the early members of this Society was written, it would make a pretty good book. I want to thank the Society of Wisconsin personally for what they have done for me. If I have in any way contributed to the advancement of the Society I am only too glad. They call me one of the old members. I don't think I am the oldest. Dr. Maercklein is not quite as young as he was when he came into the Society, but I think he is younger than I am. I know as far as Dr. Maercklein is concerned there never was a meeting of the Society that I have attended in Wisconsin that he was not present, and he talked as long and as much, and said more, than I could have said.

Dr. Charles L. Babcock, Milwaukee:

I would like to add a word of commentation to the President's address. It is always interesting and proper to look back and see what men who have gone before us have been doing. We often find that, perhaps by comparison, the present has not made quite the wonderful advance that we sometimes think it has. At any rate we find there have been many strong, able men who have worked earnestly along the lines in which we are working today.

I am also heartily interested in the plan to benefit and improve our Society by means of a reorganization. In fact I am heartily in favor of any plan which will tend to broaden the interest in the Wisconsin State Society. It has been a valuable Society, is valuable today, and will be more valuable in the future.

Dr. J. J. Wright, Milwaukee:

I would not feel quite right if I did not pay my compliments to the President on his able address. I cannot go back with the former speakers and talk of ancient history, because these gentlemen are speaking of dates that extend to the time when I was born; but whenever I hear men speaking of the struggle of those days it always makes me think of the debt of gratitude the younger men of this Society owe to the older men for the standards they have raised and stood by through all these years. It is a strange coincidence of Providence that a generation ago this Society was born in this city.

It has grown and flourished. It has been useful. This child has gained some strength, but, as has been said, it has not developed the strength that is customary for youths of the Northwest to develop as their nature and environment would suggest. It may be that it is the proper time that dissolution should come to this body, and that again in this city, and in this same cradle, another child should be born with perhaps a different environment, with perhaps more strength, with perhaps broader views, and a larger incentive for good. There are many things that could be said relative to the future, and speculation as to what it should be, but, gentlemen, it will all come to naught unless every man who is here, and every man whose influence can be brought to bear, will put his shoulder to the wheel and do his share. I sometimes feel a hesitation in doing the small part that I do. I feel that I would like to shrink from it; and again it comes to me what these men with these gray hairs have done, and what I might do for future generations. I sometimes think it a good deal of speculation as to whether or not the present plan under consideration will be a success; and again I think perhaps it will be a great success. I don't think anybody can prophesy that accurately. But, there is one thing we can do, we can all do our part, and the better we do it the larger development we are going to have in this Society, which ought to be very near and very dear to every member of the dental profession in the state of Wisconsin.

Dr. W. C. Wendel, Milwaukee:

Not being one of the ancients, but having been a member of the Society more than a quarter of a century, I would like to speak in behalf of the middle class, not being at the top of the ladder, nor at the foot of the ladder.

There have been a great many sentiments expressed as to the old wheel-horses, and their system of operating, but there certainly has been progress made, year after year, since the time of the introduction of the rubber-dam. New ideas, such as the porcelain inlay and other things mark the evolution of dentistry. The older men were just as enthusiastic, as far as their knowledge was given to them, and as to the advance they desired to make in the profession; and the progress at that time was as great, probably, in their sphere of knowledge, as it is at the present time. Certainly the older practitioners were at a disadvantage. They didn't have the knowledge that we have at the present time. But, in the face of all this, considering the history of the state of Wisconsin, it is deplorable that we should, out of a membership of 300, have lost about fifty, considering that we have about 1,200 dentists in the state of Wisconsin, and the membership is now a little over 200. Therefore, we are holding only about 20 per cent of the general practitioners of the state of Wisconsin. Now there certainly must be something wrong. Why is it that we cannot induce, or create, a sentiment of enthusiasm and feeling in our profession, to get these men to come and mingle with us, and exchange thoughts and ideas for their welfare as well as our own. Certainly under this reorganization I think we ought to gain in the next year at least 100 per cent of recruits. The falling off is something I cannot understand, why that number of men should withdraw, after having become members of this Society. I hope that every active member will try and put his shoulder to the wheel and assist this reorganization committee in every way for the benefit and for the upbuilding of the Society.

In conclusion I would say that I heartily thank the President for his able essay. He has certainly given us some historical facts that were not perhaps familiar to our members generally.

Dr. Warren B. Hill, Milwaukee:

It is a great pleasure to be here with you and to enjoy the hospitality of LaCrosse at the invitation of my old friend Dr. Gatterdam; but I did not expect the honor of being asked to speak or to discuss the splendid address of your President. I appreciate it very much. I cannot help but commend him for the manner in which he has handled the subject, for I believe it is policy for an individual or a society when they are standing on the threshold of new ventures and new things to pause for a moment, and in retrospect review those things that have led up to the present, in order that they may be better guided in the future. I will say that although I am not a dentist I have been extremely interested in the early history of this Society, and I feel that I know something of the sacrifices that were made by those old nestors of dentistry in coming together and working against obstacles to launch this splendid society for the state of Wisconsin. I will say, as a doctor of medicine, that in our profession we have recently undergone the same transition from the old to the new, and having been a member of the reorganization committee of that society in the state of Wisconsin, I feel that I can commend you for the steps you are about to take as outlined by your President. I feel that in recommending it your committee has gone down deep into the subject, and have answered to themselves the questions that have been propounded here in the dis-discussion as to why you have not a larger membership; and that is because your Society is a separate and distinct association from the local organizations that you have throughout the state, and that membership in them does not at present constitute membership in your State Society, as it ought to; and that many men are contented with small things; they are satisfied with their local dental society, and do not know, do not appreciate the necessities of getting into the larger body, and partaking of the larger, better and greater things that are there for them. Having reorganized your state society, and these men having entrance into it by virtue of their local affiliations, they will say, "It is mine now, and I will partake of it, because I have paid for it, and I am going to have all that is coming to me"; and your Society will not only be larger in numbers, but larger in enthusiasm and larger in attendance. I would say another thing in regard to that: that throughout this state, especially in the more sparsely settled communities, it is a difficult thing for the men there to organize themselves properly without assistance. They have not had experience; they have not felt the necessity; they do not know how to go at it. They need a parent body to send someone to them to organize them, to help them put away their petty bickerings and jealousies, and get them together to work for their own as well as the good of your State Society, and the good of the profession at large. So I say to you that while you have the splendid records of those grand men that you must revere, and whose memories must be a pleasure to you, you must also look forward to a broader and better interest in your profession, and one that will stand for far greater progress than you have ever seen before.

Dr. W. H. Cudworth, Milwaukee (closing the discussion):

Gentlemen, there really is nothing to say in closing the discussion of my feeble effort, except to thank you for the kind spirit in which it was received; but I do believe that the time is ripe for the profession in the state of Wisconsin to get out of the rut that this society has been in for many years. As one of my friends said, discussing the question of broad-mindedness, when a man gets where he is broad-minded he has got to where he doesn't care. Let us all believe that the Wisconsin State Dental Society has gotten to where it doesn't care, and we want them all in.

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Just as we started on our trip a party of six had been instantly killed down in Indiana at a railway crossing, so we took extra precautions not to cross a track without careful investigation. To motor in safety one must watch many things, and an antidote to "speeditis" must be administered at frequent intervals.

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Although it is a book intended for both practitioner and stude we note with pleasure the absence of those minute technical details which are burdensome to the former, and a knowledge of which is required of the latter before he is allowed to enter upon the study of the general subject of Operative Dentistry; details which would be of little value to either. From the first page to the last, therefore, there is not a paragraph that may safely be omitted by the reader, but the entire work is worthy of the closest study.

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Chapters III, VI, XIV and XXIV, on the subjects, respectively, of "Hygiene and Arrangement of Light in the Operating Room,"

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A Text Book of Operative Dentistry by Various Authors. Edited by C. N. Johnson, M. A., L. D. S., D. D. S., Chicago, Ill. Published by P. Blakiston's Son & Co., Philadelphia, Pa. 755 pages, 618 illustrations. Price, cloth, $6.00; sheep, $7.00; half morocco, $7.50.

Notwithstanding the fact that a number of excellent text books on the subject of Operative Dentistry have appeared in recent years, this splendid work of Dr. Johnson is destined to occupy a distinctive place in our literature. Such a work can result only from a lifelong study of this subject, and the author here presents to us the results of his long experience and his many years of the closest study and investigation of every phase of operative dentistry.

A glance at the synopsis of the work reveals at once its wide and comprehensive scope. Indeed, in the minds of some, the question might arise as to whether the book goes beyond its title, but when we stop to consider that it embraces no subject which is not of vital importance to every practitioner of dentistry, and for knowledge of which he has constant need, we must conclude that such a work may properly include all the subjects treated.

Although it is a book intended for both practitioner and stude we note with pleasure the absence of those minute technical details which are burdensome to the former, and a knowledge of which is required of the latter before he is allowed to enter upon the study of the general subject of Operative Dentistry; details which would be of little value to either. From the first page to the last, therefore, there is not a paragraph that may safely be omitted by the reader, but the entire work is worthy of the closest study.

A glance at the names of the contributers is at once a guarantee of the quality of the work, for we find that the author has called to his assistance men of the very highest standing and ability, and while we may not entirely agree with their views in all particulars, yet, on the whole, their teachings will be accepted as fully in accord with the latest and most advanced thought of the day. Originality is stamped on every page, both in the chapters written by the author, as well as in those contributed by the men who have assisted him.

Chapters III, VI, XIV and XXIV, on the subjects, respectively, of "Hygiene and Arrangement of Light in the Operating Room," "Dental Caries," "Inlays," and "Treatment of Children's Teeth," are contributed by the author, and here we find that clear, concise, comprehensive and lucid statement which characterizes all the writings of Dr. Johnson. Chapter VI particularly is worthy of the closest study, the etiology, progress and phenomena of dental caries being presented in a thoroughly scientific and most able manner. It is evidently the product of a mind that has delved deeply into every phase of the subject, while the conclusions reached as regard the practical application of our present knowledge of caries, are sound and logical and may be regarded as absolutely essential to the intelligent practice of dentistry.

Particular attention is also directed to Chapters II, XVIII, XIX, XX, XXI, XXII and XXIII, the contributions of Dr. J. P. Buckley. No more comprehensive treatment of the subjects presented have ever appeared in our literature. The majority of practitioners will perhaps be most vitally interested in Chapters XXI and XXII, for here we find not only the most advanced knowledge of "the Chemistry of Pulp Decompositions," "The Treatment of Putrescent Pulps," etc., but we find also many valuable thoughts which suggest along what lines future research should be directed.

Dr. George W. Cook contributes a chapter on "Erosion." A study of this chapter shows the author to be thoroughly familiar with all the literature bearing upon the subject, and the scientific research that has been made in recent years. While our knowledge of erosion is altogether meagre and chaotic, yet work of this character serves to place the subject on a scientific basis, thus offering hope for its solution in the near future.

About one-third of the volume is devoted to the subject of Orthodontia, the contribution of Dr. Herbert A. Pullen. Beginning with the subjects of Arch Development, Occlusion, Articulation, Facial Symmetry, etc., the author considers carefully those influences intrauterine, post-natal, environment and disease which have a bearing upon them.

Passing to the subject of Corrective Appliances, the various forms are fully described together with the technique of their construction and application, and the results to be expected from their use. To one desiring to study the essential principles of orthodontia in a work not too detailed nor voluminous, we heartily recommend this chapter of the book.

In a review that must be kept within reasonable limits it would be impossible to comment on each of the thirty-one chapters which the book contains. There are seventeen contributors, all of whom are recognized as men of the highest attainments, and the whole field of Operative Dentistry, in all of its phases, is covered in a manner more comprehensive than has heretofore been attempted. It contains nothing obsolete, but, on the contrary, is fairly bristling with the very latest thoughts and ideas along both scientific and technical lines. As an example of this we note the fact that the subject of cast inlays is very fully covered, this chapter being contributed by Dr. J. E. Nyman.

Typographically the work is above all criticism, and is a beautiful example of the printers' art. The cuts and illustrations are, for the most part, new and original, and appeal to even the most casual observer as being strikingly clear and exact.

Both the author and the profession are to be congratulated on the appearance of this volume, the former that he is enabled to thus further benefit the profession to which he has devoted the best efforts of his life, and the latter that it may still further profit from the genius and the vast experience of the author and those who have so nobly assisted him.

L. S. T.

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

To Strengthen a Baseplate Before Trying in:—Coat the surface of the wax with several thicknesses of shellac varnish and allow to dry thoroughly.—*F. W. Stephan, Chicago.*

Application of Arsenic:—In applying arsenic to a cavity that extends below the gum, moisten the cavity with eucalyptol, and completely fill with temporary stopping. Drill a hole through the stopping to the point where you wish to make the application, apply the arsenic, close the opening with more gutta-percha, and there is no danger of poisoning the gum tissues.—*W. E. Tennant, Fond du Lac, Wis.*

Success in Organization:—In order to make any organization successful there must be a willingness on the part of its members to undertake any work they may be called upon to do, with all the enthusiasm, endurance and action within them. He who acts from selfish motives or the hope of reward other than of having done his task, and to have put the best there is in him into its performance, can be but transiently successful in any undertaking.—*R. J. Hood, Sparta, Ill.*

Treatment of Caries:—In the treatment of caries in the practice of dentistry, the place to study is at the chair, and every operation we do should be done not by habit or by custom or by rule, but by the exercise of critical observation and judgment. If all of dentistry is to make up operations and do things to earn money, is there anything harder on earth? But if there is room all the time for the exercise of all your faculties on things to attract your attention, and to use your judgment, then there is some interest in it.—*Frederic B. Noyes, Chicago.*

A Method of Retaining a Gold Crown:—Gold crowns are often troublesome to retain in position, whether they are employed for abutments for a bridge or for replacing the lost natural crowns of single teeth. They may be held in position with more security by adopting the following method: After the crown is made it is placed in position on the root and a hole drilled through the band at a point where any portion of the tooth extends outside of the gum, making a cavity through the crown into the tooth, and insert a gold inlay in the cavity after the crown is cemented.—*G. W. J.*

Indications for an Artificial Denture:—When a patient has failed to attend to his or her teeth at the proper time, either from lack of funds, carelessness, ignorance, or wilful neglect, and state truly, as we know they often do, that they cannot afford to pay forty, fifty, or sometimes one hundred dollars to have their naural teeth filled, crowned or bridged, and we have every reason to believe that they probably will never be able to have the work done, rather than let that patient suffer, it is best to extract the offending tooth or teeth and adjust a well-made, properly fitting artificial denture.—*F. A. Lane, Macomb, Ill.*

Proper Care of Teeth:—I believe any individual's natural teeth may be saved from childhood to extreme old age, if the proper care is given them at the proper time. The examinations should be made at intervals sufficiently frequent to prevent any cavity which might form from extending beyond the first stages. By neglect every degree of decay is passed through, until an inlay involving the entire crown may be required, and treatments and root fillings be necessary under it; yet the value of a natural tooth, and its superiority over the artificial is so great that the end justifies the means.—*H. W. McMillan, Roseville, Ill.*

Sterilizing Instruments:—No dentist has a moral or legal right to employ instruments that may abrade or penetrate any of the oral tissues, that have not been sterilized by any process that will accomplish the same end as would boiling them for fifteen minutes. Syphilitic individuals can be cared for with impunity if the operator protects his hands with rubber gloves and then scrubs all the instruments employed and boils them for fifteen minutes. If this plan is pursued there is no need of such absurd action as is often recommended—that all such instruments should never be used again but thrown away.—*W. H. G. Logan, Chicago.*

Diagnosing the Causes of Malformation of the Teeth:—It is quite possible that syphilis may cause malformation of the teeth, but there are many other diseases which cause similar malformations of the teeth. Scarlet fever or any disease which interferes with nutrition of the teeth may cause a change in their forms. To say that all notched and ill-shaped teeth are of syphilitic origin is heaping opprobrium on forbears wholly unwarranted. The diseases which may be confused with syphilis are, epithelioma of the lip, deep tubercular ulcers of the tongue, acute ulcerous gingivitis, the so-called canker sores, and herpes.—*Thomas L. Gilmer, Chicago.*

Treatment of Pathological Conditions in Roots:— The thing I am most anxious about is the inflammatory process that may have started about the apex of the root, and I want to give that tissue the best chance to heal. For that reason I want to use an agent that is the least irritant to the animal cell, of any that will control, temporarily, the process of decomposition in the root of the tooth. From that standpoint, therefore, we would never use formalin because it is as severe in its action upon the animal cell as it is upon the vegetable cell. It is a terrific irritant and the cases of drooling of serum, following its use, come so often under my view that I feel it is a bad agent to use. I do not attribute every case of drooling ot serum to the use of formalin, but we can use a controlling agent that is less irritating.—*G. V. Black, Chicago.*

Convenient Matrix:—In filling cavities with amalgam where a matrix is required, and none is at hand, a good matrix can quickly and easily be made as follows: Get a piece of flexible cardboard—a visiting card will do—shape it to form a band around the tooth, overlapping the ends and secure it by wedging in the interproximal spaces with orange wood. If there are no adjacent teeth the band may be secured with floss silk. Matrices so made are not irritating to the gums, are easily constructed, easily removed, can be adapted snugly and you can use a new matrix for each filling. I have obtained good results in their use and am now keeping a stock on hand in the form of bands of different sizes and the ends pasted together.—*M. A. Gottlieb, New York, N. Y.*

Modified Use of Bonwill's Method:—A modified use of Bonwill's method of mesio-distal grooving of the occlusal surfaces of molars and bicuspids offers several advantages over other methods in common use, viz.: larger teeth may be selected with possibilities of securing greater potential energy upon their contact surfaces; when widely grooved from the center toward the buccal and lingual cusp eminences a greater differential or grinding movement is permissible upon these surfaces by the swing of the mandible; the buccal cusps of the lower may be so formed as to have a cutting or shearing and penetrating effect upon fibrous foods when forced into the grooves of the upper; and a larger number of balancing contact points may be secured to readjust the plates, if disturbed in' the act of closure.—*T. W. Pritchett, Whitehall, Ill.*

A Case of Infection:—My attention has recently been called to a peculiar case of infection: A dentist in performing an operation for a young lady let an instrument slip and it cut her lip slightly. He thought nothing of it at the time, nor did she. In due time she had a chancre of the lip at the position of the little cut. Naturally the dentist was very much exercised and started an investigation. He was able within a few days to establish the fact that the young lady kissed a syphilitic young man on the night of the day on which her lip was cut. If the dentist had not punctured the lady's lip, probably she would not have had infection. On the other hand, if she had not kissed the young man she would certainly not have had it, as the dentist's instruments had been sterilized. If the dentist had taken the precaution to have cauterized the cut with carbolic acid and swabbed it over with alcohol, possibly she would not have been infected.—*Arthur D. Black, Chicago.*

Shield the Innocent:—I prefer arsenic to cocain for the removal of the dental pulp, because many patients approach the dental chair with hesitation and trepidation. Suffering endured while in this mental condition is much intensified. Nearly all stories of dental agonies reach their climax in "the way I suffered in Dr. So-and-So's office," while ten-fold more suffering endured before the doctor was consulted is seldom mentioned to their timid friends. While we cannot in every case remove the pulp painless with either drug, I find arsenic on the whole milder, besides a portion of the pain is not endured while in the dental office. This from the standpoint of both patient and dentist is worth considering. Covering the exposed pulp after applying the treatment with a sheet of tin under the stopping, as recommended by Dr. W. T. Reeves of Chicago, prevents pressure on the pulp and leaves a receptacle for blood, gas or serum and almost entirely eliminates pain.—*Wm. Dick, Trimountain, Mich.*

MEMORANDA.

EASTERN ILLINOIS HOSPITAL FOR THE INSANE.

Work done in September, 1908: Plates, 6; gold fillings, 1; gold crowns, 2; cement fillings, 0; silver fillings, 34; treatments, 19; extracted, 432; cleaned, 6; roots filled, 12. Dr. Geo. A. Mills.

IOWA BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next examination at Iowa City December 1, beginning at 9 a. m. Practical examination in operative and prosthetic dentistry. All fees must be in the hands of the secretary by November 15. E. D. Brower, Secretary, Le Mars, Iowa.

OHIO STATE DENTAL SOCIETY.

The forty-third annual meeting of the Ohio State Dental Society will convene in Columbus on December 1, 2 and 3, 1908, at the assembly rooms of the Great Southern Hotel.

The program of essays and clinics will be such as to afford instruction to all in the various phases of present day practice.

Make your arrangements now to be present. Come and enjoy the benefits to be derived and renew old friendships.

F. R. Chapman, Secretary, 305 Schultz Bldg., Columbus, Ohio.

RECENT PATENTS OF INTEREST TO DENTISTS.

897,160. Production of tooth cement, F. Schoenbeck, Leipzig, Germany.
897,171. Dental sterilizer and water-heater, E. G. Stamper, Paducah, Ky.
897,518. Artificial tooth mount, S. C. Bloom, Philadelphia, Pa.
898,546. Means for securing artificial dentures, E. S. Barnes, G. T. Williams and C. B. Reynolds, Seattle, Wash.
898,559. Dental bridge, C. E. Crombie, Minneapolis, Minn.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago, at the University of Illinois Dental Department, corner Honore and Harrison streets, beginning Monday, November 9, 1908, at 9 a. m. Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school, or dental department of a reputable university; or (3) is a graduate and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board. Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The

examination fee is twenty ($20) dollars, with the additional fee of five ($5) dollars for a license. Address all communications to J. G. Reid, Secretary,
1204 Trude Building, Chicago, Ill.

EXAMINATION OF DENTISTS FOR THE ARMY.

The surgeon general of the army announces that while there are no vacancies in the dental corps, he intends to hold examinations to establish an eligible list from which appointments will be made as vacancies occur.

Applicants for appointment as dental surgeons in the United States army will be authorized to present themselves at the nearest military post at which a commissioned officer of the medical corps is stationed, for examination as to physical qualifications for employment, and those found physically qualified will be invited to report at West Point, N. Y., or San Francisco, Cal., about December, 1908, for the professional examination. No allowance can be made for expenses incurred in undergoing these examinations.

Application blanks can be procured upon application to the surgeon general of the army. The essential requirements to securing an invitation are that the applicant shall be between 24 and 30 years of age, a graduate of a standard medical or dental college, and shall be of good moral character and habits.

Army dentists are employed under a three years' contract at the rate of $150 per month; are entitled to traveling allowances and suitable quarters; they have the privilege of purchase of supplies at the army commissary. The hours of official duty are from 9 a. m. to 4 p. m., although they are subject to emergency calls. During other hours they are permitted to treat persons not entitled to gratuitous services with their own materials.

PROPORTIONS OF THE NORMAL DENTAL ARCHES (TEMPORARY AND PERMANENT).

The British Society for the Study of Orthodontia has appointed a committee to ascertain what work has been done up to the present by way of ascertaining the proportions of the different types of normal dental arches, and applying this knowledge to the treatment of actual cases in practice. It is thought that just as human skulls are classified according to the cephalic index which is based on the measurements of length and breadth, so the study of dental arches based also on anthropological methods might be of great service as a basis for the more serious study of orthodontia. The society is, therefore, anxious to ascertain whether any measurements of normal arches have been made with this object in view, and will be grateful for any references to papers which have been published on the subject in any language, or for the names of any who have been occupied in a research of this kind.

The committee would indicate the following as the points upon which they will be glad to have any specific information or statistics, either regarding the temporary or permanent arches: 1. Relation of length of arch to breadth: What were the methods of measurement, and what points were taken to measure between? 2. Relation of size of teeth to size of arch: What method of determining this correlation was adopted? 3. Height of palate: Points of measurement used to determine this?

Any information bearing on this subject, or reference to papers, will be gratefully received by G. G. Campion, 264 Oxford Road, Manchester; H. Chapman, 20 Queen Anne street, London, W.; J. E. Spiller, 62 Worple Road, Wimbledon.

OBITUARY.

Dr. Emanuel Honsinger died at his home, 318 Park avenue, Chicago, September 18, 1908, aged 85 years and 6 days.

Dr. Honsinger was born September 12, 1823, at Henrysburg, Canada East. When quite small his parents moved to Champlain, Clinton County, N. Y., where his youthful days were spent upon a farm until the age of seventeen, when, with his father's consent, he turned his back upon farm life and started out alone to carve his fortune for himself.

Naturally he recognized that an education was his first necessity, and by hiring himself out mornings and evenings he was enabled to secure several years of schooling. He was alternately pupil and teacher. He earned the means for obtaining knowledge by imparting it to others, and his schooling was all the more thorough and comprehensive from that fact. He thus secured the fundamentals of a fair education, and being of an observant and discriminating mind knew how to use the learning he possessed.

He was musically and mechanically inclined and before attaining his majority he had made with his own hands a drum, flute, dulcimer, and a violin, without any instruction.

During the progress of his professional life he designed and constructed a number of valuable instruments for dental use. He studied under the direction of Dr. H. J. Paine of Troy, N. Y., and in the autumn of 1847 commenced practice in an office of his own in Troy, where he continued until April, 1853, when he located in Chicago and continued in practice until 1898.

He was a member of the city, state and national dental societies, and was well known and highly respected by the dental profession of Chicago and Illinois. As an upright honored citizen he was admired and loved by all who knew him, and was a credit to the city in which he made his home for so many years. He was the finest operator in the use of crystal gold that Chicago has ever produced; and many of the gold fillings that he inserted thirty-five and forty years ago are still doing good service as evidence of his remarkable ability as a skillful operator.

Dr. Honsinger was a member of the Park Avenue M. E. church since 1879. A large number of the profession attended his funeral in a body, and also showed their affection by sending a beautiful floral tribute.

C. P. P.

DEATH OF DR. A. L. NORTHRUP.

New York, September 22, 1908.

To the Editor of The Dental Review:—

In the sudden passing from our midst in Paris the 31st of August by heart disease, no more majestic figure than of Dr. A. L. Northrup could be removed from our ranks. We are sure that his ability as presiding officer has not been excelled. Our late choice friend and co-worker, Dr. Atkinson, was wont to say we need no other president than Dr. Northrup, and often urged that he be made permanent. For eight years the Odontological Society claimed him as their presiding official, and in many other societies his services were secured. It is about forty-seven years since we first met him in the association of the late Dr. John Allen of Bond street. In those days he began to show signs of pulmonary troubles, and he was advised to take to horseback exercise, and all these years he has been a familiar figure in Central Park, astride a Blue Grass Kentuckian half-stepper, for which he told us he had been offered $2,000. Without a doubt, this out-of-door exercise has prolonged his years to the age of 70, to which he passed but a few months ago. Dr. Northrup was a gentleman at all times. We esteemed him as a true friend in all that our sphere with him called for. The doctor was a born diplomat and many a good office has he rendered.

To Dr. Northrup is due the honor of giving us an intelligent term for the meaningless one, viz., "nerve of the tooth"; he has given us "Tooth Pulp." No one has had a larger recognition of his services by the public than the doctor. In a business outlook he has proved a success. Two years ago he had the courage to retire to his fine Connecticut farm in the town of Ridgefield, where his remains are to be laid and await the future call of the eternal.

We attended the funeral services at the home of the doctor's nephew. There were about fifty dentists present; it being at a time that few had returned from their vacations, otherwise there would have been a much larger attendance. To one who has so long been in touch with the dentists of Greater New York, now almost fifty years, and those that were present stirred the memory of all these years with tender reminiscences. None more moved us than the venerable and sadly infirm Dr. Norman W. Kingsley, attended by a young valet; so changed, but on his grit of will, by cane and the arm on one side, he pressed his movements slowly but persistently. He greeted all cheerfully, and the old smile came through a full beard of snow white, so changing his facial expression, as he had always been seen with a clear face, except for the strong mustache. As he passed by us, we grasped his hand warmly and firmly. We said, "We are glad to see you once more," and further, "Come again." He replied, "Not to a funeral." We are told that his real age is quite a little above eighty.

Another veteran was Dr. Bishop, formerly of Worcester, Mass., now retired for several years. The doctor was in full practice when we were a student in that city in 1852. He and Dr. O. F. Harris, the inventor of the iron chair, afterwards purchased by S. S. White Company. Dr. Bishop followed Professor Truman in the practice of Frankfort-on-the-Main, Germany. He will be in a few months ninety years of age, and not a bit of the decrepit look on him nor in his movements. He has a genial, bright and gentlemanly bearing, and it is a pleasure to meet him. Some of those present were Drs. Perry, Walker, Remington (Dr. Northrup's successor), Charles Allen, son of the late Dr. John Allen; Ottolengui, Rhein, Carr, Gaylord of New Haven, Walker of Brooklyn, Barnes, Collins, Young, Myer, Morgan, Howe, Bishop 2d, retired, who made the splint for Secretary Seward's broken jaw at the time of Lincoln's assassination; Farrar, Stockton, Meeker and others. "Part of the host has crossed the flood, and part are passing now, and we are to the margin come." Many are asking in these tumultuous days, "Is life worth living?" We answer, "No, if we are living a self-life." Some men have asked this question, "Why was Professor Miller taken away so seemingly prematurely?" I answer that his mission was ended.

There is a life that can be lived in this body. "It is the gift of God, it is in His Son, he that hath the Son hath life, and that hath not the Son hath not this life." This life lives on in spite of all human vicissitudes, until one's life work is done.

This is our assurance. G. ALDEN MILLS, New York City.

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THE ART OF INVENTION.*

BY CHARLES CHANNING ALLEN, D. D. S., KANSAS CITY, MO.

So runneth the scriptures: "In the image of God created He him."

Not that God fashioned man from the dust in any physical replica of Divinity, but He endowed His sons with His own essence and made creators of them, that they might subdue the earth and have dominion over it. By this essence, this breath of life, man was given command of Knowledge and of Truth, through the imagination. And thus man was guided by this divine light, out of an echoless and unmarked night, into the radiance of his commanding mentality. This mentality impels man to use the forces and stores of nature as materials for his own ends, and make therefrom a new order which shall constitute his own progress and develop his own individuality.

Any departure from the natural that is the result of the mentality of man is an invention; therefore, all artificial things are inventions. This applies to philosophies, religions and moral codes as well as to the mere material devices. It follows that the entire progress of humanity is due to this basic principle. It follows that that quality of the mind of man which has enabled him to emerge from the realm of mere animal instinct, governed entirely by external necessities, is worthy of our most careful consideration.

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*Read before the Wisconsin State Dental Society, July, 1908.

Invention, like many other phenomena, enlists several attributes of the mind, but it is indebted principally to the imagination. The ideas bearing upon any problem are subject to verification by the understanding, however, and must be adjudged by the understanding to be true. It is not sufficient, necessary as it is, that man be possessed of a great store of facts, that he should have made his mind a repository of miscellaneous information, but it is of first importance that he have understanding. The understanding must be cultivated if one is to be able to recognize truth. It is possible to so cultivate it, for truth, primary truth at least, bears its own credential to the understanding and that without necessity of proof. After first tutelage, it is more consistent with reason for one to gain knowledge from understanding than that one should gain understanding by virtue knowledge. One would scarcely expect Omnipotence to be an infinite encyclopedia of facts and possess all knowledge because of memory, but rather that God should know all things because of His infinite understanding. So the inventor must first have prepared his understanding for the reception of problems, and their solution, as they are taken from his creative imagination and the imagination of memory.

From circumstances which surround most individuals and more especially from the unsatisfactory and benighted condition of the art of teaching, it is impossible for many people to give systematic and directed effort to the cultivation of understanding, and what advancement is made along that line is made more or less unconsciously. Sometimes, by circumstances apparently fortuitous, men are correctly directed mentally, and unconsciously educate themselves in understanding, and thus prepare their minds for the proper handling of those problems which arise in every living man. Men have not sought by a systematic course of study to make of themselves professional inventors. Those who have been engaged in invention and who have given the world its most useful and wonderful achievements, were men thus unconsciously, or at least subconsciously prepared. This is why we so often ascribe an invention or discovery to a happy thought. It is not merely an accidental idea, but the mind has been prepared to recognize and lay hold of the appropriate truth as the imagination marshals its array of contingent ideas past the receptive mind.

Imagination is susceptible of a number of subdivisions, but those that interest us most in considering invention are creative imagination, reproductive imagination and critical imagination. In working out a fixed inventive idea or arranging correlative data, creative imagination is of first importance, but in the process of formulating this fixed idea, or in the selection of the correlative data, reproductive imagination, or the imagination of memory, comes first. Reproductive imagination is the imagination of memory and by its virtue one can bring to light, if he choose, former experience under the stimulus of associated ideas.

The power to use formerly entertained ideas in a new combination and creating the new out of the old, the unknown out of the known, is a phase of studied or synthetic invention. Creative imagination is the re-assembling or recombination of old ideas into new combinations heretofore unknown and new to the inventor. This is what constitutes invention, principally, and is why experience and education as well as the faculty of observation are so invaluable to the inventor.

In the perfection of an invention it is very necessary for us to have, after the reproductive and the creative steps, a critical imagination in order that we may form judgment as to its value. And this power for rational criticism is a thing that is vary rare. Every man has within him something of the power of the creative, but not all are able to look upon their work and see wherein there is error or where further and sometimes vital change and improvement may be made. They are so wrapped up in the fact that they have originated something that all power of logical analysis of that creation is lost and their invention fails because they hold it sacred to criticism.

Not all men are equally endowed with a talent for invention and indeed the inventions of most men are minor and only lesser improvements on the great achievements of the genuises in this art, or are variations which come from everchanging circumstances. But it is natural that most men should imitate, and it is important that they should, for all cannot lead. Where one has an idea to develop it may not appear at once how that end is to be accomplished, but he examines the problem as thoroughly as his ability will permit in order to find out all the requirements, and when that is done and he has the case thoroughly in hand, he begins to call upon his imagination for those ideas which promise to afford a solution. Each one of these as they are presented to him is examined and tested by comparing it to the requirements and is accepted or rejected accordingly. Sometimes one will find only a portion of a suggestion available, and if so it is put to use and the process goes on. The vast majority of all the preliminary suggestions for any problem of any complexity at all will not bear the test of reason and must be rejected. This is why one who understands the art of invention and has given the subject the consideration it merits will not rush to his model shop every time he thinks of something which seems to promise well. Nearly all inventive ideas glow very much brighter when they first occur to the mind than they do when they have been subjected to a rigid test of reason. It is very much easier for a man who has trained himself to the feat, to construct a device in his mind, and change and rebuild it in his mind, time and again, than it is for him to make alterations in the solid metal and wood into which models materialize. In fact, the mind can be trained to such a point that remarkably complex productions can be perfectly pictured there, and all their various members can be seen in their proper relation. When one has reached the point where he can do this, the model-maker then becomes only the last consideration to him, and when he does reduce his invention to the material he will find very few changes to make. It frequently happens that after getting an idea a man may find no solution at all or anything of promise bearing upon the solution. He will be compelled to lay it aside, but it is not utterly repudiated. Rather it is filed away, and it is sure to recur from time to time, as something which promises to bear upon the problem comes to the mind. Frequently a valuable idea may lay dormant for years before the proper solution comes, and when it does come, it is with astonishing clearness and finality.

For instance: The inventor of the gum camphor method of taking a matrix studied for a long time, as many others had, to find the best substance which could be used to fill a matrix for a porcelain inlay; one which would aid in forming it, and render it more easily and safely handled, and at the same time be a substance which could be easily got rid of, leaving the matrix perfectly clean and not distorted in any way. He thought of waxes and other less pliable materials from time to time for several years, but there was an invariable objection of some kind. Sometimes the problem would not come to the surface for months, and then some new solution would suggest itself, only to prove valueless. One day during the Japanese war he bought a newspaper, opened it and the headline on the first column of the page read: "Japanese Raise Price of Camphor." There was the final suggestion. That appealed to the mind at once as the solution of the problem. For the inflammability of camphor was known; that it burns completely and leave no ash was known; that it was sufficiently waxy to use for this purpose was known. In short, it had no known serious negative qualities, but had enough known positive qualities to justify the mind at once in accepting it as the probable solution of the problem and warrant its trial. It proved to be good and has been much used since.

So many inventions are solved with apparent ease after a lapse of time that those who have given little attention to the subject are apt to think that the principal source of invention is happy thought.

Numerous problems require little time or study after the first ideas are suggested because the inventor is so well informed along these lines that solutions are presented at once. At other times years and even a lifetime may be spent in the development of an idea. Men worked generations after the discovery of aluminum in clay to find a method, other than a mere laboratory experiment, for the production of that now common metal.

When a great invention has once been produced it opens up new fields of endeavor and affords new opportunities for the inventor, especially along the line of minor inventions and improvements. Take the invention of vulcanized rubber, a most important production, and how many thousands of inventions have been made which are dependent upon it! The end is not yet; they are being produced every day. The inventions dependent upon the steam engine are innumerable.

In so short a discussion no catalogue of great inventions can be made, but one class of inventions which has done the world untold good is seldom mentioned, and is worthy of special attention. Reference is made to the remarkably ingenious experiments devised and carried out practically by the physicists and chemists for the demonstration of natural laws, such as the measure of atoms, molecules, ions, etc., and the measuring of the velocity of light, electricity and hundreds of other marvelous conceptions which have originated in the fine brains of these students of nature. Such inventors are none the less remarkable when we consider that they are almost always made without hope or expectation of any reward other than the satisfaction to be derived from the fact of having established a truth in such a way that it will serve man yet to come.

In fact, until very recent times the inventor's reward was a precarious factor and most frequently he neither reaped honor nor substance from his efforts in behalf of his fellow man. Many times he was persecuted and reviled, and it was positively dangerous to his personal safety to be known as one who searched in new fields. Many a man whose brain has stored genius for this kind of advancement has suffered ignominy and death. Many men of this class have been compelled to suffer ridicule, have been called crazy, charlatans, cranks and impostors. We have had a class of men, however, wild-eyed and impractical through ignorance, who have deserved little dignified consideration. These men have been self-styled inventors and while some of them have not lacked in sincerity and enthusiasm, their utter failure to understand the requirements and limitations of their problems has done much to bring discredit to men of finer instinct for the art, and really deserving of help and encouragement. These evil days, however, seem to be upon the wane, and now a man of merit can secure audience when he desires, and is given all consideration and respect by an appreciative public. The public has recognized the dignity and importance of invention as an art, and requires that the devotees of this art be men of understanding and attainment.

The time is not far distant when men will make improvement a vocation and become professional inventors, and schools will seek to train men for this calling. Then will the inventor's life cease to be the somber romance and lonely tragedy that it has been all too frequently in the past.

There are two rewards which follow invention; one is the immediate reward which accrues to the inventor, and the other, which is the portion of humanity. The inventor is rewarded riches, fame and honor, but these alone do not constitute his only compensation. Another, and to the true devotee of the art the greatest, is the satisfaction one has in the mere act of originating something novel and supposedly useful. Nothing can be compared with the inventor's sublime mental concentration and oblivion to all things exterior. He is alike unconscious of heat and cold, pestilence and famine; he eats as an incident and sleeps when overcome with fatigue; rags or broadcloth are the same to him; he is alone in the midst of the multitude, wrapped up, not in himself, but in his idea, and when that is wrought, his eye gleams with infinite beatitude and his heart blooms with glorious philanthropy.

Man no longer sits in unkempt squalor gnawing at the fetid bone which his prowess has gained him in hand to hand conflict. He no longer goes about half naked or begirt with untanned skins, chilled by the wintry blasts and burned by the summer sun, or, at the close of day, compelled to crawl into some noisome cave, unwarmed and unlit, to brood in benighted ignorance until he sinks into the slumber of exhaustion. He no longer depends upon the fortune of a day for his sustenance or when that fortune fail lies down in hunger, companion to his wolfish dog. Material benefits are his by conquest. His fields are tilled and harvested, his food is selected and prepared, his garnered stores insure him against an evil season. The raiment which protects him from the elements is fabricated to its purpose and serves its end. His hearth warms and cheers him and his rooftree shelters his domestic peace and hospitality. Afforded relief from the immediate necessity of provision for the physical being, man turned to the development of his intellect. Thus was evolved man's philosophy, the servant of wisdom and handmaid of truth, out of which comes our governments, our social order, our laws, our codes and our sciences, and bids him seek solace in the sweets of meditation. It crowns him with that final glory of his life—religious faith, that subtle authority which ministers to his youth, sanctifies his love, blesses his children, consoles him in his adversity and lights the star of hope when falls the eventide.

DENTAL LEGISLATION.*

BY J. J. WRIGHT, D. D. S., MILWAUKEE, WIS.

Twenty-three years ago the first law to regulate the practice of dentistry was enacted in this state, and it has been revised but once in that time.

Dentistry had gone through a wonderful process of evolution during this period, and in order that the welfare of the public may be safeguarded and the best interests of the profession be conserved, it is necessary to revise the law from time to time. Our present law does not cover many of these changed conditions and to this end a bill should be presented to the next legislature.

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*Read before the Wisconsin State Dental Society, July, 1908.

One need for new legislation is strongly felt along the line of educational qualifications. What is considered advanced ground now will not be sufficient requirement for five years hence. This is illustrated by the fact that five years ago our present law was enacted with a two years' high school requirement. Today that clause is obsolete, inasmuch as the colleges themselves are all requiring three years of high school and many of them high school graduation. Such an education is not too much to require of a young man entering our profession. There is not one case in ten where a young man with proper ambition and pluck cannot obtain a high school education, even though his financial resources be ever so limited.

The medical profession now require high school graduation, in 1910 one year of university or its equivalent, and eventually they expect to require two years of a university course.

Five years ago the dental profession led the medical profession in preliminary requirements. The requirements in the legal profession have been equally advanced. We cannot afford to allow dentistry to fall behind in this particular. The successful man in any line of business today is he of the trained mind.

It is becoming universally conceded among the profession that if a man is properly educated before entering college and receives a license from a state board upon examination, that he should be granted the privilege of practicing in any state having equal requirements.

This reciprocal relation now exists between many states on the basis of high school graduation and examination by their respective state boards. And there is no reason why Wisconsin should not have such a clause. Two years ago a committee was appointed by this society to draft a reciprocal clause in our present law, but you will probably learn by the report of that committee why their work was not carried to a successful end.

Letters are received almost daily by the board inquiring about reciprocity in this state, and if Wisconsin stands for consistent progress, this should be a feature of the law.

There is a question as to whether a licensed man has the right to establish himself at the head of a firm and have a number of unlicensed men to operate for him, thereby producing work over which he has no direct supervision, and cares even less for its ulterior usefulness to the public.

Many states now make it a violation of law to hire unlicensed men as assistants, thus endeavoring to check this evil, which cannot be construed other than a menace to the public.

Another form of unprofessional conduct could be overcome to some extent by requiring registration by counties with the county clerk. This would compel the traveling advertiser to register in each county. Such a man often assumes the name of one who is licensed and being, constantly on the move, avoids prosecution. Most of these offenders travel with quack medicine companies and are among the worst professional parasites.

A discretionary clause concerning temporary license might be advantageously inserted in the law. It often seems a hardship to require a deserving man to wait some months for a regular examination, but an opportunity might thus be given an unscrupulous man for gaining a foothold in the state. Whether or not the good from such a clause would outweigh the evil is a hard matter to determine without trial.

Revoking of licenses is another point in which our law is lacking. If a man conducts himself in an unprofessional way, or is convicted of crime, he should, if his offense is grave enough, have his license revoked.

For instance, two years ago a dentist in Milwaukee was sent to the house of correction for eighteen months for abandoning his family. After serving his time he joined an Indian medicine outfit and is now traveling about the state, a disgrace to himself and his profession. Such a man should have his license revoked.

One of the most difficult things to be accomplished in the enforcement of any dental law is the proper policing of the state. More financial means should be provided and a new system devised for accomplishing this work. A dentist living a long distance from any member of the state board sends in a complaint that there is a man practicing in his town without a license. He is at once told to inform the district attorney in his county, as the prosecution must be done by that official.

He is also asked if he will sign the complaint, as such a complaint must be signed by a resident of the county in which the offense is committed, and nine times out of ten he refuses to sign the complaint or does not answer the letter. Nor is he to be blamed. If he signs the complaint his fellow citizens are given to understand by the defendant that it is only professional jealousy. This causes a division of public sentiment, in which the legally qualified practitioner is bound to lose some of his prestige, and if it comes to a jury trial he may even lose as some juries in a small town will not convict for such offenses.

Enough money should be at the disposal of the board so that an agent may be hired to visit such places, obtain witnesses and a disinterested party to sign the complaint, then prod the district attorney into action. Some boards have this system and enough means is derived from charging applicants for examination twenty-five dollars instead of ten. This is one of the few states that charges so low a fee for examination and as a consequesce the board is always handicapped for a proper financial support.

To recapitulate. The points to be considered for legislation are:

1. Preliminary educational qualifications.
2. Reciprocity.
3. Hiring unlicensed assistants.
4. Licenses to be registered with county clerk.
5. Temporary licenses.
6. Policing the state and resources for same.

MOUTH BREATHING; ITS INFLUENCE ON THE DEVELOPMENT OF THE DENTAL ARCHES AND JAWS.*

BY DR. M. N. FEDERSPIEL, MILWAUKEE.

The subject of nasal stenosis and its effects upon occlusion during the erupting period has become in recent years of great importance. In every age and country we find that mouth breathing was prevalent. We are familiar with the aspect of the unfortunate mouth breather. Every one has noticed the dull, expressionless face, with open mouth, short upper lip, narrow palate and upper arch, with the anterior teeth protruding or crowded, the lower jaw distal to normal, giving the unfortunate a vacant and stupid expression. Also we notice upon studying abnormalities of the dental arches that the alveolar processes are restricted in their development, and are not large enough to accommodate all the teeth which naturally force them in a crowded position when erupting, so that some teeth, especially the upper incisors, are rotated or overlapping and that the cuspids are in buccal or lingual position from the normal arch line.

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*Read before the Wisconsin State Dental Society, July, 1908.

Much has been contributed to orthodontia text-books and dental periodicals relative to the effects of heredity, intermarriage of different races, premature loss of deciduous teeth, loss of permanent teeth, tardy eruption of permanent teeth, supernumerary teeth, habits, disuse, abnormal frenum labium, accidents, etc., upon the development of the dental arches and occlusion. But recent investigation has thrown much light upon the effect that mouth breathing has upon the development of the dental area.

It is my purpose this evening to point out the injury that will result from mouth breathing. This kind of abnormal breathing is most always the outcome of nasal obstruction, usually in the form of acute catarrhal inflammation, which is brought on by a hyperaemic swelling, followed by an overproduction of mucus and transudation of serum from the blood vessels and the breaking down of epithelium and emigration of leukocytes. This condition may begin to set in at any time, usually from the second or third month after birth. Little attention is given to this acute condition. Lack of treatment at this time frequently leads to a chronic catarrhal inflammation. This chronic pathological condition sooner or later develops hypertrophy and hyperplasia of the turbinated bones, to be followed by involvement of the nasopharynx, later by a hypertrophic condition of the pharyngeal tonsil. The hypertrophic state, though found in adults as well as in children is, however, more common in children between the ages of 5 and 15 years, or during the period of permanent teeth eruption.

According to Wyatt Wingrave, out of 4,000 operations for adenoids at the Central London Throat and Ear Hospital, there were found eight cases under 12 months, 124 under 3 years, 860 from 3 to 5 years, 1,144 from 6 to 11 years, 996 from 10 to 15 years, 523 from 15 to 20 years, 286 from 20 to 30 years, 56 from 30 to 40 years, 3 from 40 to 50 years. Out of 4,000 operations, about 3,000 cases were found to exist from 5 to 15 years. This evidence proves conclusively that nasal obstruction due to adenoids exists during the erupting period. Once established, this condition slowly but surely retards the normal development of the nasal and oral areas.

During normal respiration the mouth is closed, the tongue with its powerful fan shaped muscle assists in pushing and broadening the upper dental arch. When oral respiration takes place, we find the mouth more or less open, the tongue occupying an abnormal position. This condition retards the development of the upper arch. If it remains untreated it will effect a change in the mechanical action of the muscles by holding the mouth open day and night, so that the patient may breathe more freely. The mandible with condyles resting in the glenoid fossa is then pulled downward and distally by the muscles attached beneath the chin.

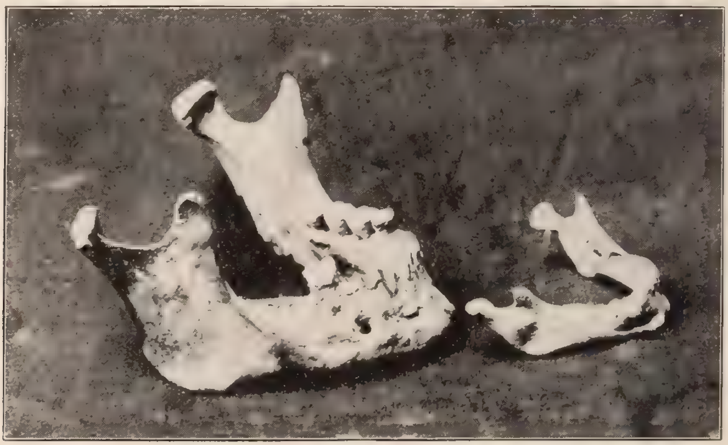

Fig. 1.

Of all the forms of malocclusion the most difficult to treat is the open bite malocclusion. This condition is the outcome of some form of nasal obstruction. The mouth is kept open so that the patient may breathe more freely. This position will sooner or later change the mechanical action of the depressor agents of the mandible, namely: first, the platysma myoides muscle; second, the digastric muscle; third, the mylohyoid muscle; fourth, the geniohyoid muscle. These muscles, assisted by gravity, that is, the weight of the jaw, keep the mouth open, while the anterior segment of the temporal muscle, the masseter muscle and the internal peterygoid muscle antagonize the depressors of the mandible. This abnormal action of these opposing muscles will be influential in changing the development of the mandible.

Let us review the physiological change that takes place in the mandible. Fig. 1 illustrates the changes that take place in the shape of the mandible by growing from an obtuse angle to almost a right angle. Should this normal development of the mandible be arrested by abnormal muscular action, the mandible will be prevented from growing to the right angle shape, and will instead remain obtuse. And when eruption takes place the posterior teeth will occlude, while the anterior teeth will remain apart.

On the subject of open and closed bite malocclusion, Dr. Case says in the *Dental Cosmos* of December, 1905, that at the age of four to twelve years, when mouth breathing is quite common, slight but continued abnormal pressure very easily changes in form, the undeveloped bone.

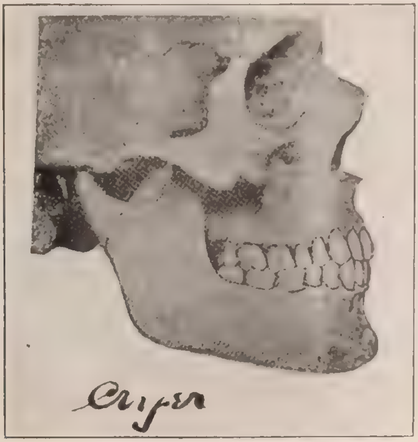

Fig. 2.

Fig. 2 represents a normal relation of the teeth and jaws. Fig. 3 shows the change that may take place in the body of the mandible from continuous inequality of force of muscles in the direction of arrows.

While considerable abnormal change may at times take place in the body of the mandible, due to mouth breathing, another change that takes place is in the formation of the glenoid fossa. Since in my examination of abnormalities I have found the lower teeth distal to normal, the upper arch narrow, with the anterior teeth slightly protruding and sometimes resting on the lower lip, I am convinced by expanding the upper arch and reducing the slight protrusion of the upper anterior teeth sufficiently to occlude mesio-distally with the teeth of the mandible, providing the patient voluntarily brings the mandible forward, I would obtain a correct relation of the teeth and improve the facial lines. I am also convinced, after much experience in the treatment of these cases, that when I attempt to correct the abnormalities after the patients had reached the age when the teeth had all erupted, and after the alveolar process and the jaws had developed, and the muscles had become stronger and more set, that the treatment in spite of modern retainers would in most cases prove futile. If these cases of abnormality were treated during the time when the dental area is developing, then there would be no tendency of the teeth to assume their original position.

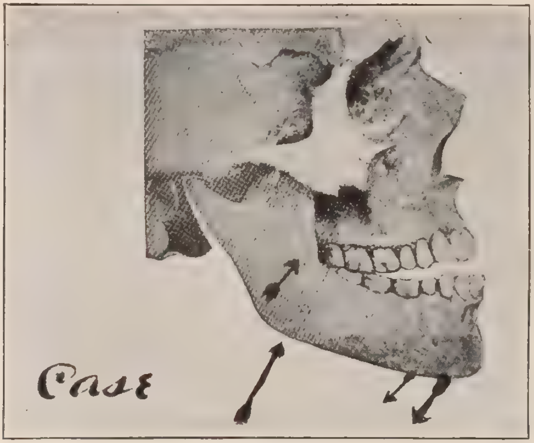

Fig. 3.

Treatment of cases in which the dental area was already developed was invariably unsuccessful, while, on the other hand, opportune care during the age of dental growth proved successful in every case.

Modern periodicals and text books tells us of the physiological development of the alveolar process, jaws and eruption of teeth. Little is said about the development of the tempro-mandibular articulation composed of the glenoid fossa of the temporal bones and the condyles of the mandible. The glenoid fossa is bounded anteriorly by the eminentia articularis, posteriorly by a thin lamina called the tympanic plate. The anterior and posterior boundaries of the fossa meet at the glaserian fissure which separates the articular from the non-articular part of the fossa. The articular part is covered with cartilage and called the mandibular portion. The non-articular part is occupied by a position of the parotid gland. The roof of the fossa is exceedingly thin. The condyle of the mandible articulates with the articular part of the glenoid fossa. It is convex and greater at its transverse axis than at its anterior posterior. It is covered with cartilage. The condyle and glenoid fossa forming the temporo-mandibular articulation is held together by paroestial and facial ligaments.

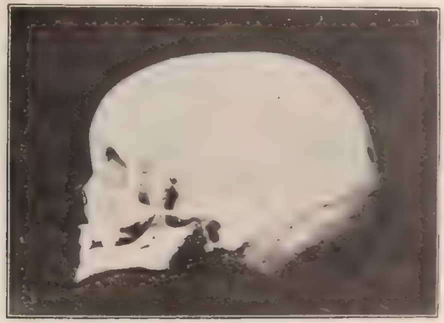

Fig. 4.

This condition of the tempro mandibular articulation we find when it is fully developed. It is, however, different at birth; at that time there is practically no glenoid fossa. The condyle resting on a slight depression. At two years, Fig. 4, we find a ridge of bone growing at the posterior surface called the tympanic plate. At about six to eight years we find this depression to be a shallow fossa with long, sloping margins, gradually growing over and around the condyle of the mandible. At this time a change of the articulation brought on by a distal shifting of the mandible will force the condyles to rest on the posterior surface of the glenoid depression. This condition if not treated will allow the perostial and facial ligaments to conform to the abnormal articulation and will also permit occlusion of the teeth to remain distal to normal, thereby destroying the facial lines. At the age of 12 to 15 years, Fig. 5, the development of the alveolar process is about complete, the teeth having become firmly imbedded within it, the glenoid fossa is well developed with strong heavy margins surrounding the condyles, the ligaments are firm and the muscles strong and set.

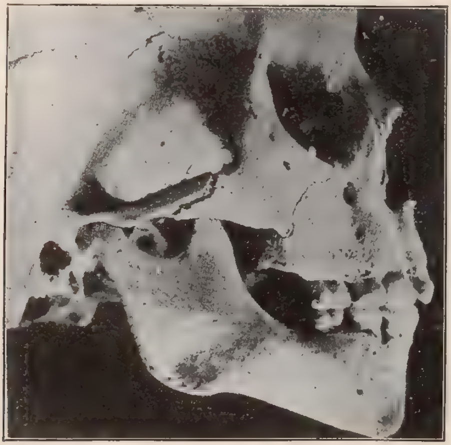

Fig. 5.

A knowledge of the physiological development of the glenoid fossa should convince one that to obtain normal results in the proper relation of the teeth and facial lines when the mandible is distal to normal, correction should be made when the glenoid fossa allows a favorable change of articulation, and when the ligaments and muscles yield.

TWO TWENTY-FIVE YEAR OLD EXPERIMENTS.*

BY DR. CHARLES RATHBUN, LONDON, ENG.

This I may say is not a paper, but only a few explanatory remarks as to the patients I shall show at at the clinics. A little over twenty-five years ago I was consulted by a lady who had two badly abscessed and broken down molars. She came with the intention of having them extracted, and in the case of the upper one to have another plate made with three teeth instead of two. This plate would eventually ruin the cuspid to which it was fastened. I told her I would cure the abscess and put in two small bridges, of three teeth each, on both sides. When I started to make the bridges, it occurred to me that it was a great pity to cut a perfectly good cuspid for support. I consulted with some of my professional friends as to what would happen to the upper bridge of three teeth with only the support of the crown on the first permanent molar. Some of my friends said that the weight of the bridge would cause the teeth to leave the gums, and others said that the act of mastication would gradually force the teeth into the gum. Under those circumstances, viz., that the one condition was as likely to occur as the other, I propose to show the patient at the clinics on Tuesday when you will see exactly what has happened to these bridges, which have been in use for twenty-five years. Of course, many of you have been doing this sort of thing right along and if I were a little younger some of you would have been, probably, doing it before I was born, but there are young men whom it might interest to see some of the pioneer work of this nature and how it still remains useful.

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*Read before the American Dental Society of Europe, London, 1908.

I am really writing this paper for the benefit of those who have not inserted bridges in this manner, and especially for those who by the accident of anno domini have not seen how their work would appear after twenty-five years' use. This patient has kindly consented to be present on Tuesday and I hope you will grant her the courtesy and me the kindness of looking at the mouth. I have not seen the mouth except to put in a porcelain inlay in an upper bicuspid for a long time—the patient having been abroad. When it occurred to me that it might interest the members to have such a case brought before the clinic, I virtually did nothing to the mouth except put in this porcelain inlay and treat one tooth. I am pointing out this fact, as otherwise you might be led to think that there are several things to be done to the mouth. There is an open-faced crown on a cuspid carrying two laterals which has been in her mouth twenty-three years, but my innate modesty prevents me from calling your attention to work of such recent date.

A FUNDAMENTAL NEED IN DENTAL EDUCATION.

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL.

This is an age of internationalism. Never before in the history of the world were the people of different countries mingling in such close communion one with the other as now. The activity of human thought and the ever increasing transportation facilities between nations are bringing people closer together year by year and leading to an interchange of ideas among men which must ultimately result in greater uniformity of methods in all those pursuits which demand technical procedures or definite plans for their practice. With slight modifications due to climatic differences or local conditions the practice of dentistry should be the same the world over. At least the fundamentals of correct practice are the same, and it is pretty generally true that what will cure the toothache in one country will cure it in another. It is in any event certain that in the particular phase of our practice known as the technical or manipulative there should be a reasonable similarity of methods in the different countries because of the fact that correct technique is based upon the laws of mechanics, and these laws are not variable. It therefore follows that in the practice of a profession which demands so much of technical ability as does dentistry there should be as great a degree of uniformity the world over as possible if the people are to receive the highest efficiency of service. And this uniformity can be brought about only by the fullest intercourse of thought and experience between the professions of the various countries, and by harmonizing and systematizing the consensus of knowledge thus gained, selecting the best from each country and rounding it all out into one cosmopolitan standard of practice.

This may seem utopian and impossible of accomplishment, but some of the greatest world movements in the history of mankind have at the outset appeared as chimerical as this. Just now it would seem as if the time were ripe for a movement in this direction. The standards of correct practice are as applicable to one country as to another, and all we need is a better understanding of the fundamentals and a strong and sustained movement in the direction of greater unity

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*Read before the American Dental Society of Europe, London, 1908.

of thought and practice. In other words, dentistry needs standardizing the world over.

It may be claimed that this is already being brought about through the medium of dental societies, that an organization, for instance, like the American Dental Society of Europe, representing as it does so many different countries, is a very effective means of unifying the practice of dentistry in the countries embraced by it, and this to a certain degree is undoubtedly true. This is one of the chief benefits of all international societies, and they are really in this respect more far-reaching in the good they accomplish than is at first thought evident. But to actually standardize dental practice we must go further back than the societies. We must begin with our dental colleges and see to it that our educational standards are made more nearly uniform. If we study the methods of teaching in the different countries we shall see as great a variation in the systems of dental education as in the practice of dentistry itself. Each educational system has something good in it, and each has of course something that could be improved. The thing for us to do is to carefully analyze our different systems and select that which is best in each and unify it into one integral whole with the idea of securing the highest efficiency in our educational methods.

For instance, in some countries the matriculation requirements for entering colleges are higher than in others, and high matriculation is unquestionably desirable. In some instances we find greater emphasis placed upon what are termed the medical subjects in the course than upon the strictly dental or technical. In some the theory of dentistry through the medium of lectures is taught more than the practical or actual work of dentistry at the chair. In this case it seems to be the attitude of the college authorities that the student should receive the major part of his practical training or experience under a preceptor in an office or—as is the case with many medical graduates—he should go out to the public with his mind stored more or less with knowledge and gain his experience by practicing upon the people. This may seem a rather blunt way of putting the matter, but it is in strict accordance with facts as they exist in some institutions. In certain schools we find the manual training idea, or what is known as dental technics, carried out very thoroughly, while in others it is almost entirely ignored.

With even the few dissimilarities just noted it is manifest that there is great need for careful deliberation and free discussion of what should constitute the best course for dental students, to the end that greater unity of methods be attained. It is with this idea that your essayist ventures to make some suggestions as to what he considers a desirable course in preparing young men for the practice of dentistry, and, as already intimated, if this course is satisfactory for one country it ought to be at least reasonably practical for all.

As to matriculation there can be no question regarding the desirability for high requirements. A man to engage in the practice of a profession which brings him into such close contact with the people as does dentistry should in the very nature of things be possessed of knowledge and culture, and no man who is uneducated in the fundamentals can succeed to the best advantage in acquiring the special knowledge which a dental college is expected to impart. High matriculation is therefore an essential factor in any advanced scheme of dental education, but it will not do to content ourselves with the mere proposition that a candidate should be well educated before entering a dental school. The character of that education is exceedingly important in at least one particular, and when a young man elects to study dentistry the nature of his preliminary course of study should be mapped out for him. To practice dentistry in the highest expression of its art a man must be possessed of rare digital skill, and the training of the muscles toward the acquirement of this skill must in most cases begin during youth. Any plan of preliminary education for the dentist which has not in it some kind of manual training is therefore inadequate, because if the student's fingers have had no training till the time his mental equipment has been brought up to the required standard he begins his technical work in dentistry under a handicap. The muscles which enter into expert manipulation should be trained early in life before the approach toward maturity has sets its static influence upon them, and this opportunity once lost is never fully regained. There is only one exception to this rule, and that relates to the rare individuals who are so highly endowed by nature with mechanical skill that manipulative procedures are never difficult at any stage of life—though even with these early training is an advantage. It is difficult to conceive of a more helpless man in the profession than the one whose brain has been filled with the theory of dentistry, but whose fingers wholly lack the ability to carry out the theory in practice—unless it is the man who has neither the theory nor the practice. In this utilitarian age a man must be able to do as well as to know, and the ability to do requires years of application.

But, on the other hand, too great emphasis must not be placed upon technical training to the neglect of other subjects of equal importance.

The faculty of recognizing pathological conditions and knowing how to treat them is an essential factor in the making of a dentist as well as is the cultivation of such artistic taste as will enable him to practice his profession without offending the esthetic sensibilities of refined society. In short, it may truly be said that it requires a more varied order of ability or attainment to properly practice dentistry than to practice any other profession, and this fact should be fully recognized in the college course.

It will thus be seen that if we are ever to establish an ideal dental curriculum throughout the world we can accomplish it only at the expense of immense energy and the highest order of devotion to the welfare of the profession. I know of no other educational system among institutions of a special or professional character which demands of the professors or instructors so close and constant application as does teaching in a dental college, and this after all may be credited as one of the chief reasons why dental education has advanced so rapidly. The thing which is difficult to do, and at the same time essential to be done, is that which develops most surely the latent resources of mankind, and if dentists as a class are entitled to the reputation of being ingenious and resourceful it is due mostly to the necessities of their work which have constantly called out their best endeavor.

The fact then that the problem of establishing the world over a more uniform system of dental education and dental practice present difficulties need not deter us from approaching it with courage and confidence, and it would seem to your essayist that the time has arrived in the history of our profession when a definite movement along such a line should be inaugurated. Not that anything revolutionary or anything interfering too radically with the customs or habits of thought of the different nationalities should be attempted in the beginning. It must be a matter of growth and gradual development rather than any sudden upheaval, something which appeals to the reason of all thinking men and which will enlist their cordial coöperation. It must therefore be an educational movement, one which will bring to the attention of the profession everywhere the existing train of thought and the most advanced ideas throughout the world, so that each country may be made familiar with what the others are doing. One of the means to this end has already been inaugurated in the way of international dental societies. Your own society, for instance, in its meetings and the publication of its proceedings is accomplishing something in this direction, the international dental congresses which have been held and those yet to be held, the International Dental Federation—all of these are movements in the right direction and will result in good. But something more is needed. The congresses must in the nature of things come too far apart to keep up sustained and immediate interest in international matters, the Federation which meets annually does not intimately reach a sufficient number of men, and its proceedings, while of the most profound character and of the greatest importance in the ultimate upbuilding of the profession, do not appeal to a wide class of readers on account of lack of the technical information which most men in the profession are constantly seeking.

It remains then for some other means to supplement the influence of international societies, and it is believed that this can be found in the establishment and wide circulation of such periodical literature as shall present the consensus of the most advanced thought of the profession in all countries. In fact, the International Dental Federation already has under advisement the plan of establishing an international review of dental literature, a project which, if successfully carried out, will, in my opinion, do more than any other one agency for the advancement of what may be termed cosmopolitan dentistry. The idea is, I believe, to have an abstract made of all the best that appears in dental literature and have it translated into several languages, so that it will be available for the profession of different nationalities. If a periodical of this nature could be successfully conducted it would give a stimulus to international sentiment and bring the profession of the world into greater harmony of thought, which must eventually result in more uniform methods of practice.

The thing of importance in considering the broad question of professionalism is not that a few brilliant minds here and there shall attain to great heights of perfection in the science and art of dentistry or that they become sufficiently skilled to challenge the admiration of the world by their achievements, but that the rank and file in every country where dentistry is practiced shall be raised to the average ability which shall result in good dental service being done for all the people of every clime who are in need of such service and who have sufficient cultivation of mind to desire to have it done. When we raise the efficiency of the entire profession we are accomplishing something worthy of the best endeavor of every progressive man, and those of us who are thinking on these matters and who have the welfare of the profession and the people at heart should not rest until this desideratum is finally consummated.

Note—The above paper, in the absence of Dr. C. N. Johnson, was read by Dr. L. J. Mitchell.

GINGIVAL MASSAGE.*

BY C. M. WRIGHT, B. S., A. M., D. D. S., CINCINNATI, OHIO.

To the Members of the American Dental Society of Europe.

Gentlemen: I can never refuse an invitation from your honorary secretary to send a paper to you at your meetings, and especially as I find it impossible to meet with you at this time in London.

After thirty-five years of deep interest in the society, which I helped to baptize on the Rigi, I cannot neglect a call from her while memory lasts.

Pictures of old meetings, of early members, of the unique position of the society among the dental organizations of the world, of the distinguished members, of the splendid record, and of the grand future for this society, pass before by mind's eye and make me happy.

My feelings on this subject are not new to you. I have expressed them often before. And with your permission I will begin with the topic selected without further introduction.

Massage is one of the oldest methods of treating a great variety of human diseases. It has a long history. The term itself is said to be derived from the Arab word *mas,* to knead, and medical writers have classified it as mechanical therapeutics by friction or by percussion, applied especially to the skin, muscles and joints.

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*Read before the American Dental Society of Europe, London, August, 1908.

The friction method consists of rubbing, rolling under the finger, tapping gently, pinching and kneading. The percussion method consists of very rapid concussions of short blows, not forcible enough to cause pain.

The trained medical nurse is skilled in various ways of employin massage. Many of the so-called fads of our times and history, such as the laying on of hands, the Swedish movement cure and osteopathy, aside from their value as "hypnotic suggestions," owe their success and have accomplished their good results from the kinds of massage employed.

Diseases of the nervous system, such as hysteria, insomnia and neuralgias, have been successfully treated by massage.

Diseases of the circulatory system, palpitation of the heart, local congestions and anemias, inactivity of organs like the liver and bowels, muscular weakness, and I might say nearly all the ills that flesh is heir to, have been, in innumerable cases, alleviated or cured by scientific massage. It has a legitmate place in medical practice. It rests upon subtle physiological grounds.

The practice of dentistry is today and always has been based on the soundest principles of physiological therapeutics, and the dentist believes in the value of massage of the oral tissues as a curative and particularly as a prophylactic measure.

The reason for our apparent tardiness is devising some ingenious instrument for the application of this valuable means of preserving the health of the mouth is, that in the early days, the attention of the dentist was absorbed in the treatment of the hard tissues of the mouth, and to supplying substitutes for the loss of these tissues and organs, and later to the difficult task of mastering the etiology and surgery belonging strictly to such tissues as enamel and dentin. In this one department his scientific researches have accomplished wonderful results, and the world is indebted to Miller and other distinguished members of this society for such investigations in etiology as would alone place the profession on a high plane in medical and biological science.

As the field of the dentist broadened and the superficial and subgingival tissues were included in his specialty, exhaustive research was extended and more thought was given to the therapeutics of these structures, and the value of massage of all oral tissues was early recognized. As the field still widened and preventive dentistry has been embraced, the dentist is concerned today in methods of applying prophylactic massage. All this has been progressive, natural and logical, for medical science and art is a gradual development—a growth, the completion of which is not within our horizon. Methods of employing gingival and oral massage with the bare fingers, with cots upon the fingers, with specially manufactured "gum massage brushes" of bristle and rubber, have been fully explained. These methods have been exhibited at dental society clinics and to patients. The careful dentist tries to teach his patients how to use the tooth brush and how to use the gum massage brush.

I do not know of any instrument for producing percussion in the mouth. Such a one would perhaps be more effective and safe on these tissues than the coarse bristle brush. In my practice and for myself I have used to a limited extent the ordinary small moose hide polishers on the mandril of a dental engine. I find that I can produce the short, rapid concussions on every part of the gum with more agreeable and satisfactory results than with the gum massage brushes which I have used.

People do not have dental engines in their homes, but if there could be made a machine, electrical or by hand, by which rapid and gentle blows could be applied through a fresh and sterile disk, I think patients and nurses could be taught to thoroughly massage the gums of the family without running the risks of wounds and infections of the mouth.

A majority of the thoughtful men practicing dentistry today would approve and recommend to their patients a systematic daily massage of the gingivae if some such instrument could be placed. There are certain dangers in the tooth brush which we all recognize.

This massage would be recommended for its effect upon the capillary and arteriole circulation in the soft tissues of the gum and in the pericemental membrane. The physiological hyperaemia caused by the rubbing or percussion would be followed by a more active exudation of nutritive fluids through the capillary walls.

The living cells of the parts would undergo more active metabolism. The excretion of waste and other products of metabolism would be more readily delivered from the tissues, and a higher and more normal vitality than is to be found in the gum tissues of the average civilized man of today would follow.

This would mean to him healthy oral secretions, greater power of resistance on the part of mucus cells, to deleterious substances and products of fermentations which are ever present in the mouth, and a firmer support to the teeth themselves.

Without going into the question of whether increasing the activity of the local circulation of a part will have any influence on the colloid material of the tissues, provoking it to the multiplication of coagulins, opsonins, alexins or antiferments in the blood, which would enable it to combat the attack of any or all forms of life, whenever these menace the stability of the mechanism, we may believe that the dentist feels certain from clinical observations and experiments; first, that systematic massage will so exercise and strengthen the gums that they will be able to attain and maintain the maximum of healthy gum function; second, that the mucous cells will exert their protective influence by the secretion of healthy mucus instead of the pseudo-mucus described by Dr. George W. Cook of Chicago; and, third, that the pericemental tissue will be firmer and more resistant to injuries (tartar, bands, etc.) and infections, the serumal deposits will be hindered; and, finally, that we do realize in individual cases and generally marked improvement in the tone of the tissues of the oral cavity from massage.

Massage is a prophylactic measure of infinite value to local (hard and soft) tissue, and against a number of constitutional or remote diseases of which oral sepsis is believed to be a potent etiological factor. (Septic gastritis, toxic neuritis and other septic conditions of the organism.—Hunter.)

The studies of that disease, so heavily overburdened with names —"phagadenic pericementitis," "interstitial gingivitis," "ulcerative ulitis," "gingival necrobiosis," "pyorrhea alveolitis," "alveolitis," etc., or, in simple terms, that catarrhal and suppurative inflammation of the gums and sockets of the teeth—have led to various methods of treatment, and massage of the gums has taken a conspicuous position in the prevention and cure of the disorder.

It is not necessary in this short communication to enlarge upon or to try to elaborate any scientific conjecture which may adorn the question, either on its etiologic, therapeutc or prophylactic side. But it is necessary for me to express my creed on the subject, believing as I do, first, that the average person, dentist or layman cannot properly "clean" his own teeth or massage his own gums; he needs expert help. Second, that it is not the business of the modern dentist to devote his energies and time to the cleansing and polishing of teeth with orange-wood and pumice or to the massaging of the gums with finger, brush or the electrical vibrator. Third, that it is the duty of the dentist, knowing what he does today about the physiological necessities of the oral cavity, to supply through the colleges or schools a class of neat, deft handed, trained women to be known as dental nurses, denticures or any other name that will distinguish them from the dentist to do this work in our special field of preventive medicine.

I know that I am like Betsy Trotwoods' protege, Mr. Dick, who could not keep King Charles out of his manuscript, and I find the dental nurse creeping into nearly all of mine. I beg your pardon, I had the pleasure of meeting Dr. Rhein of New York the other day at a great dental meeting of some 800 of our profession in Indianapolis. Dr. Rhein, as you know, suggested the name "dental nurse" for these laborers in the field of prophylactics, and he waked up my weary enthusiasm on this point by saying that if he were not pressed down by a mass of other matters, from which he could not escape, he would himself establish a school in New York City for the training of dental nurses. The demand for such services is steadily and rapidly increasing among the cultured, and we, who have created the demand, refuse to supply the means for satisfying it.

As I have spared you from quotations from distinguished medical and dental writers for support of my propositions in this paper on massage, so shall I spare you from an appended list of authors on histology, physiology, pathology, etiology and dental hygiene, whose labors substantiate the simple statements which I have tried to boil down and compress into a palatable tablet for your entertainment today.

A METHOD OF ACCURATELY FITTING SHELL CROWNS.*

BY H. W. C. BÖDECKER, B. S., D. D. S., M. D., BERLIN GERMANY.

The shell crown, when perfectly adapted to the root, is probably the most satisfactory substitute for the natural crown of a bicuspid or molar tooth. Poor adaptation, however, through difficulty of access or through carelessness, has caused this class of crowns to fail in many instances and thereby brought them into disrepute. The chief causes of failure are improper preparation and incorrect measurement of the root. The preparation of roots has been so fully discussed that repetition is unnecessary. But our methods of measuring roots are sadly lacking in accuracy.

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*Read before the American Dental Society of Europe at its London meeting, 1908.

The perfect shell crown depends as much upon correct measurement as the perfect inlay depends upon an accurate impression. We have at our disposal two methods of measurements. The one, with the wire of an odontometer; the other, with a set of rings of known sizes. Even with the greatest care in measuring the circumference of a root to be crowned, perfect adaptation is not always obtained. The odontometer fails when decay has destroyed the root deeply under the gum in places, and the rings do not give us the correct size when the outline of the root is irregular, as in upper bicuspids and in badly decayed lower molars.

To make a perfect crown we must know not only the exact length, but also the exact shape of the circumference. To obtain these the following method will be found to be very satisfactory. With a ring or odontometer the root is measured as heretofore. The wire or ring is then pushed as far as possible over a tapered rod of wood or metal, and the place marked where it exactly fits. At the tip this rod should be fifteen at the base and about forty millimeters in circumference. Thin copper bands, of which most everybody has a supply in his office for taking inlay impressions, are then tried upon the rod until one is found that exactly fits at the mark, indicating the measurement of the root. This band is then trimmed and fitted to the root. The copper being thin and soft, the operation is easier and less painful than fitting a shell crown. When the fit is considered satisfactory a stick of softened modeling compound, of about the diameter of the root, is forced into the band.

If, upon carefully removing the band with the compound, we examine the impression, we not infrequently meet with surprises. The band, which under other circumstances would have been the finished crown, proves to be not so good a fit as we had imagined. By carefully examining the impression we can determine whether our original measurement has been correct, too large or too small, or whether the root has any peculiarity of outline. Should the margins of the root be clearly defined, we may consider the impression to be satisfactory. If, on the other hand, the impression is defective, another must be made either with a different sized band, or with more care in getting the band between the root and the gum at all points. The height of the finished crown should now be taken by laying a small lump of wax upon the root and requesting the patient to close the teeth. This also gives the distance between the two adjacent teeth. If seamless crowns are used, it is best to pick out the model at this stage.

The impression is then poured with plaster. If care is used later in fitting the crown on the model, ordinary plaster will answer the purpose, though if preferred one of the varieties of hard plaster may be used. When the plaster has set the model is partially trimmed before removing the impression. With the band as a guide all excess plaster is cut away until there remains a rod, whose cross-sectional outline corresponds to that of the band. The impression is then removed and the upper part of the rod so trimmed that its outline is identical with that of the margin of the root as shown upon the end of the model. If deemed advisable a line marking the extent to which the band has overlapped the edges of the root may be made on the model.

The seamless crown or the gold band is now made. The mesio-distal diameter is determined by the aid of a pair of callipers from the wax bite, and the crown expanded or flattened, or the band contoured accordingly. The height is also determined by measurement. Some idea of the articulation can also be gained from the wax bite. The crown or band is now tried upon the model. Should it be too large one or both sides must be split. If, on the contrary, it is too small it should be stretched by carefully hammering the edge. The slits may be soldered before or after trying the crown in the mouth. The crown or the band is now placed upon the model and the edge burnished down until it conforms to the model about its whole circumference. With little or no further fitting in the mouth the crown can then be set.

A shell crown made in this manner saves the patient a great deal of inconvenience, and gives the operator the satisfaction of having set a perfectly fitting crown.

Note.—This paper, in the absence of Dr. Bödecker, was read by the honorary secretary.

COMPOUND FRACTURE OF INFERIOR MAXILLA.

BY H. W. DAVENPORT, D. D. S., CHICAGO, ILL.

Patient, man 35 years old; injured morning of December 4, 1907. Was caught under the chin on broken cable of steam shovel, carried into the air and dropped, tearing out the jaw from the right central incisor to the right cuspid inclusive, the central and lateral incisors remaining intact in the fractured portion, but the cuspid lost. The superior right lateral incisor and cuspid were broken off at the gum margin, inner cusp of first bicuspid broken off, right corner of right central incisor, and inferior first molars partly broken off.

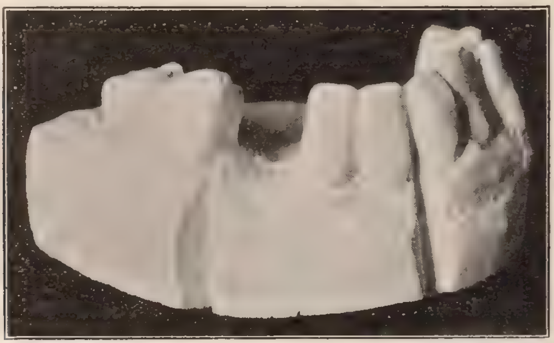

Fig. 1. Showing lines of fracture, with loose fragment and lost bicuspid.

Patient was otherwise seriously injured, but will refer only to the mouth. I was called to the case the following day, December 5, 1907.

Condition of Patient: Face badly swollen, right eye closed, deep laceration in each lip over fractured part, deep hole to right of median line of chin, full of dirt, etc., mouth full of dirt, attending physicians had gotten injured parts into as aseptic condition as possible. They had ligated the fractured part to left side so that it could not get out of the mouth or into the throat previous to my arrival at the hospital.

Mode of Operation: Everything sterilized, wired fractured parts solidly together, keeping jaws in perfect articulation; this finished, then adjusted wires to first and second bicuspids and first molars, superior and inferior left, then adjusted wires to second bicuspids and second molars, superior and inferior right; then closing the jaws to a perfect articulation, twisting wires until jaws were locked solidly together.

Treatment of Case: Nurse irrigating the mouth thoroughly and regularly and seeing patient each morning.

Face soon normal, but general physical condition sore and painful. Patient very restless, tries to work jaws continually, finally in about ten days have to rewire inferior to superior jaw. Patient irritable and nervous continues trying to move jaw, infection from hole in chin now sets in and disintegration of bone commences. Patient springs all wires, depression muscles by this time pulling hard on posterior fractured end of maxilla pulls it in and down on the tongue and now have destruction of bone the complete breadth of cuspid tooth that was knocked out.

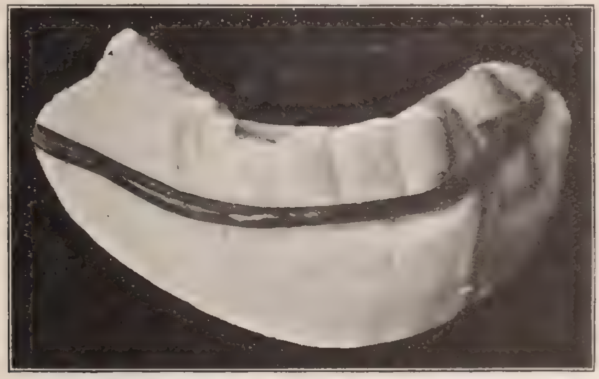

Fig. 2. Absorption of bone with fragment and right half of maxilla dropping together and the latter inclining toward the tongue. Alignment wire in position.

Patient badly swollen under the chin and constant exudation of pus through fractured parts.

Meanwhile I was studying out a simple splint whereby the patient could be operated upon without any fear of a deformity afterwards. All methods that I could get trace of appeared complicated and uncertain as to the final results, but the conditions now demanded action.

My Method: Taking an impression in modeling compound of complete fractured jaw and making a plaster of paris model, I shaped a half round gold clasp wire splint from left first molar around and beyond the fractured parts to the right first molar and reinforced the splint over and beyond the fractured portions, thus giving sufficient strength to resist the drawing down of the muscles.

Fitted small clasp to buccal side of left second bicuspid, then soldered it to the splint, thus preventing lateral motion, notched the right side of the splint to hold wires firmly.

Apparently had splint made perfectly, as model showed, but upon trying it in the mouth found it necessary to completely reshape it in order to have the jaws articulate perfectly. I now wired the left side of the splint solidly to the first and second bicuspids, then to the left central and lateral incisors. Now, having the splint wired solidly, I drew the deflected right side of jaw out to the splint and wired firmly to the first and second bicuspids while holding the jaw in perfect articulation. I had the patient open and close the jaw a number of times to be certain of the articulation, and finding it correct, wired with fine wire solidly to the splint the right central and lateral incisors, carrying the fractured part of the maxilla. The wiring was now complete and the jaw as of one solid bone, there being no abnor-

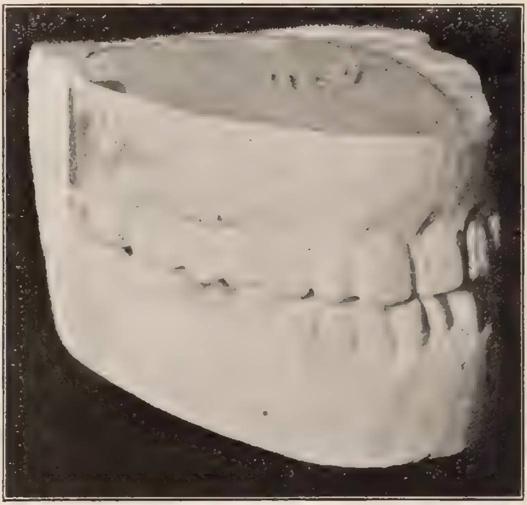

Fig. 3. Completed case. Entire space between lateral incisor and first bicuspid closed and teeth in good occlusion.

mal mobility of parts when it was opened and closed. Left patient feeling comfortable and full of hope.

From this time on the patient was given free use of jaw, but kept him on liquid diet for weeks. Two days later the patient's face was normal, with no pain, and the pus almost disappeared. Patient improved rapidly and union of bone started. Ten days after the splint was applied he was dismissed from the hospital and allowed to go home, eighty-five miles in the country.

Saw him every day the first month after his return home. This necessitated his riding each day on the railroad 170 miles. One day while examining the articulation detected a slight sliding of the jaw before getting a solid bite. I remedied this by grinding one cuspid off a trifle, which then gave an absolutely even and solid bite. As soon as I was positive of a good union I removed the splint. The jaws were fairly firm, but concluded to extract right central incisor, this giving a more solid union. Later extracted the lateral incisor also.

The operation was now perfect, also the articulation normal. Before the accident the patient's articulation was an end to end bite. Having lost one-fourth inch of the body of the maxillary bone it brought the jaw to a normal articulation.

Conclusions. Where this splint is applicable to the maxilla either anteriorally or laterally where one or more teeth remain intact in the fractured part I believe it to be the safest and most simple method of treating a compound fracture of the inferior maxilla. When seeing your patient for the first time wire the jaws together for a few days to allow the swelling to disappear, then take your impression in modeling compound, make the splint, adjust it and wire it in place. Keep the mouth irrigated thoroughly and you will have no further trouble.

PROCEEDINGS OF SOCIETIES.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held September 15, 1908, with the President, Dr. Fred W. Gethro, in the chair.

The subject for the evening was "An Operative Dentistry Quiz."

1. In cast fillings is there enough contraction in the mass

OF METAL TO HAVE AN APPRECIABLE EFFECT ON THE COMPLETED FILLING? SHOULD THE MARGINS OF CAVITIES FOR GOLD INLAYS BE BEVELED? IF SO, TO WHAT EXTENT?

DR. G. WALTER DITTMAR read the following on this subject:

If our program committee meant cast fillings made of gold, or gold and platinum alloy, or even 22 K. gold, my answer to the above question is *no.* From what experience I have had in casting and what experiments I have seen, I am not as yet convinced that the contraction of the casting in cooling causes distortion and the misfits which are produced. While no reasonable mind would attempt to argue that there is no contraction in the mass of metal on cooling from the high degree necessary to make it fluid, it is the opinion of Dr. Taggart and others that as it is cast under pressure, and as a consequence given a greater specific gravity than can be produced under ordinary conditions, the contraction in a mass of metal no larger than that required to fill a cavity in a human tooth is not appreciable, and in no way prevents the practical use of cast gold fillings.

I confess that I occasionally have an inlay that is not a perfect fit, though the casting is good. I do not attribute the misfit to the contraction of the metal, but I believe it due entirely to faulty technic or to changes in the investment.

If care is taken in every detail of the work and the rules which Dr. Taggart has given us closely observed, using the best wax and investing material, there will be practically no failures.

There are a number of causes which may result in an imperfectly fitting inlay, even though the casting is apparently perfect as far as sharp margins are concerned. Among these are the following: Imperfect cavity preparation; imperfect impression of cavity in inlay wax; imperfect carving and adapting of the wax inlay to the margins of the cavity; distorting the wax inlay in removing it from the cavity; imperfect investing of the wax inlay; the application of too much heat to the investment while drying, causing the steam to warp or distort the investment; the application of too much heat to the flask and investment while casting, causing expansion to the entire mass; the application of too much force while fasting, causing checking of the investment; the use of inferior wax and investing compound; the use of an inferior casting device. These, in my opinion, are the causes for many failures, and not the contraction of the mass of metal in cooling.

In answering the second question that has been assigned to me, I will be brief, though to answer it in detail a volume might be written.

QUESTION: Should the margins of cavities for gold inlays be beveled? If so, to what extent?

To the first part of the question, my answer is emphatically, *yes.* They should be beveled. As to the extent of the bevel, as was stated before, a volume might be written, for the position of the cavity in the tooth, the formation of that particular tooth, the denomination, be it an incisor, cuspid, bicuspid or molar, upper or lower, all are important factors in controlling the amount of bevel to give to the different enamel walls and margins of that particular cavity.

A dentist can not prepare a cavity in a scientific manner without an understanding of the histology of the enamel, its physiology and pathology.

An operator having knowledge of these subjects, who uses in the preparation of cavities chisels and enamel hatchets, soon learns the direction of cleavage of the enamel, and with sharp instruments planes the enamel walls until all loose enamel prisms are removed, the enamel wall assuming a smooth, clear, glassy-like appearance. After this has been accomplished the cavo-surface angle should, as a rule, still be beveled from six to twelve centigrades, so as to insure leaving no short or unsupported enamel prisms, which would be likely to loosen and drop out, causing a leak at the margin of the filling. For procuring this bevel, I use medium grit disks, or strips, cavity stones, or finishing burs, depending entirely on the class and position of the cavity.

DR. W. G. CLARK:

There is one point as to the contraction of the inlay that I wish to speak of. It seems to me that the explanation given by Dr. Dittmar hardly accounts for it, because the molecular action which produces contraction would be greater than that of any pressure which could be brought to bear upon it. Perhaps it can be explained in this way, that there is always contraction in the investment which is sufficient to compensate for the contraction of the metal.

I think the beveling of margins for inlays should be done at a more acute angle, say at about seventy degrees, rather than forty-five degrees, which we ordinarily use in beveling for gold fillings.

2. WHEN SHOULD PULPS BE CAPPED AND BY WHAT METHOD? SHOULD THE RUBBER DAM BE ADJUSTED FOR THE CEMENTATION OF GOLD INLAYS?

DR. EDWARD S. BARBER:

An examination of the files of ten different dental journals for the past six months shows almost no reference to pulp capping, and only one article going into the subject in detail.

This would indicate that small interest is being taken in the matter. However, the general opinion of authorities on oral pathology and therapeutics seems to be that pulps should only be capped under the most favorable conditions, namely, in deciduous teeth, undeveloped teeth, and in adult teeth where the exposure has not been made by caries, but by the bur or hand instrument in cutting retention points in healthy dentin.

Method of Capping: The method I have used in capping pulps has been as follows: Taking it for granted that the rubber dam is in position, wipe out the cavity carefully with warmed alcohol, followed by oil of cloves, then cut a disc of pure gold 36 gauge, or one of gutta percha just a little larger than the exposure. On this a small drop of thin cement is placed and set over the exposure, cement side toward the pulp. With a little pressure on one edge of the disk it is then gently brought into contact with the tooth, care being taken not to cause pain by pressure.

After this is set I generally build up a cement filling high enough to bear the strain of the gold or other permanent filling that is to close the tooth cavity.

I have been unable to find anything in the dental literature bearing on the subject, so must answer from my own experience.

I have been making gold inlays for nearly three years. The first were made by swedging a gold or platinum matrix, preferably the latter, into the tooth cavity, then filling the matrix with solder and building it out to contour.

With the advent of casting machines, I bought one of the first on the market, using a wet asbestos pad. At the present time I have a Taggart machine. Little attention if any was paid to the subject of gold inlays when I was in colloge, so my knowledge had to be gained from some of my older friends in practice, some of whom had been making gold inlays for several years. Naturally I did as they had done, and up to the present time have never used the rubber dam in setting inlays, except in two or three rare instances where the flow of saliva could not be controlled by the saliva ejector.

My method of setting inlays has been to wash out the cavity thoroughly with a stream of warm water, then to pack cotton rolls on both sides of the tooth to be filled, if in the lower and on the buccal or labial side of the tooth; if in the upper, insert the saliva tube under the tongue, which must be kept from touching the tooth during the operation.

I then wipe out the tooth with dry cotton, followed by cotton saturated with warmed alcohol, then dry cotton again, and dry with blasts of warmed air. The inlay I dip in alcohol and pass through the flame to burn away all moisture. The cement is then mixed and inserted in the cavity and the inlay jarred into place. After I am sure the inlay cannot be forced down deeper, I wipe away the surplus cement, and coat with sandarac varnish to prevent the moisture reaching the cement till it has had sufficient time to set.

My records for the past two and one-half years show that I have set 346 single inlays and 56 bridges, using 94 inlays for attachments, or 440 inlays in all. Of this number I have reset 12 separate inlays, and 6 bridges supported by 12 inlays, or 24 inlays in all.

Some of these failures were due to poorly mixed cement, some to shallow cavity formation in very sensitive teeth, and about one-third of them to dampness of the cavity walls in setting inlays.

This allows about eight failures out of a total of 440 inlays, or 1 8-10 per cent, which might have been prevented by the use of the rubber dam, but these same eight fillings were subsequently set without it using more care to dry the cavity, and they are in place yet.

3. Why do some authorities recommend the use of non-cohesive gold at the gingival line? How can you account for the rapid decay in the mouths of foreign girls who have been in America but a year or two?

Dr. C. N. Johnson read a paper on this subject.

Question 1. "Why do some authorities recommend the use of non-cohesive gold at the gingival line?"

The reason for this is not far to seek. It is taken for granted that this refers to cases where non-cohesive gold is used in the gingival region of cavities, the chief portion of which are to be filled with cohesive gold.

Non-cohesive gold is more easily adapted to margins and walls of cavities than cohesive, and cavities can therefore be sealed with it more readily. Perfect adaptation is one of the prime factors in a good filling, and the greater ease with which this can be attained the better it is for the operator and patient. The fact that the layers of foil in non-cohesive gold do not cohere when compressed one against the other renders it possible to condense large masses of this material at one time, and this shortens the operation very materially. While non-cohesive gold cannot successfully be built out into contours, yet when condensed properly and supported between parallel walls it will resist stress sufficiently to make it a very serviceable material for this part of the filling. If cohesive gold is used to cover the gingival wall it must be inserted in small pieces, and the greatest care must be exercised to avoid the tendency to curl away from one part of the wall or margin as it is being condensed against another. This makes the operation slow and more or less uncertain. The reason then that non-cohesive gold is recommended is because of its greater ease of adaptation, thus rendering the sealing of the cavity more certain, and also because of the material saving of time compared with the same use of cohesive gold.

Question 2. "How can you account for the rapid decay in the teeth of foreign girls who have been in America but a year or two?"

This question opens up the entire subject of susceptibility and immunity as it relates to dental caries, and it cannot be answered in the brief space allotted to this symposium—if indeed with our present knowledge it can be satisfactorily answered at all.

The cause must be traced to a matter of environment rather than to any change in the character of the tooth structure itself, because it is inconceivable to imagine, from the very nature of tooth tissue, how any change so profound could be wrought in the teeth themselves to account for the sudden breaking out of caries which we sometimes observe. Just what the precise agencies are in the mouth which affect the manifestations of susceptibility we are not yet quite able to say. Dr. F. W. Low of Buffalo, N. Y., has been making some quite extensive investigations along these lines in recent years and his belief is that the sulphocyanids play an important role in the suppression of the carious process. Dr. Black's emphasis of the necessity for gelatinous plaques to be formed on the surface of the enamel in the immediate vicinity where the beginnings of decay are to take place has led Dr. Low to suggest that the administration of the sulphocyanate of potassium will in a large degree inhibit the process by causing a solution of the plaques. He claims to have found that in all highly susceptible mouths there is invariably only a small amount of the sulphocyanids, while in immune mouths there are relatively large quantities. These experiments are still in progress and will be watched by the profession with much interest.

If the contention is true that decay of the teeth is a matter of environment, then we must look to the conditions in the mouth to account for the rapid development of caries in foreign girls coming to this country. It may be due to a change in the habits or in the diet of the individual. After all, reduced to its simplest terms, it is a question of cleanliness. If the surface of the enamel is kept clean it will not decay, and the best cleaning of the enamel is accomplished by the natural processes in the mouth, such as the friction of food in mastication, the movements of the lips, the tongue and the cheeks. It may be that the food materials used by the girls of Europe demand and receive more mastication than those they get in America, and this mastication not only results in mechanical friction, but in the stimulation of the glands to the secretion of a larger quantity and better quality of the fluids of the mouth, which tend to keep the teeth free from glutinous accretions.

It is difficult for me to conceive that all decays of the teeth are caused by the same agencies or that the *modus operandi* is always similar, but it seems to me that the surest way to prevent decay or to check it in susceptible mouths is to keep the teeth in full functional activity and supplement this by a rigid course of oral prophylaxis. If I had the care of these foreign girls I would want to see their teeth at least once a month for the first year of their residence in America—possibly oftener—and I feel sure that by a careful supervision on the part of the dentist and the institution of habits of oral cleanliness by the patient most of these mouths may be checked in their susceptibility and eventually rendered immune. The great difficulty lies in the fact that so few of these girls recognize the necessity for consulting a dentist till their teeth are almost irreparably broken down. It would be a fitting and a very profitable work for some dental charity to take charge of a number of these girls on their entrance to this country and prove by a practical demonstration just what can be accomplished for them by proper treatment.

If we had an adequately endowed dental institute, as we ought to have had long ago, this work could be carried on successfully through its agency, and the results would be very instructive. When some of our wealthy men shall awaken to the possibilities of good which would come from a liberal endowment of this kind we can begin to clear up many of these questions which today are confronting us, and the solution of which would result in so much benefit to mankind.

Dr. C. P. Pruyn:

Dr. Crouse was to have opened the discussion on this paper, but was unable to be here, and I was notified about ten minutes ago that I was to take his place. Perhaps it is just as well that I was only notified to speak on this subject a short time ago, because very little can be said or added to what has been so clearly and beautifully explained to us by Dr. Johnson.

I wish more of us used non-cohesive gold. I have thought that it would have been much better for my patients if I had used more of it than I have. When I see some of the old non-cohesive gold fillings that were put in by the fathers of dentistry thirty-five and forty years ago, without the use of the rubber dam, I stand aghast at my stupidity and clumsiness, and wonder why they did such wonderful work with non-cohesive gold. They did not use it principally because of its easy adaptability to the walls of cavities, but it can be used easily and in contact with the walls, on account of its softness. That is the reason why it is advocated for such cases. If we used more tin for the same purpose we would do much better for our patients in many cases. One of our dentists, who commences all of his gold fillings with gold and tin, has been doing and is doing today very satisfactory work indeed.

With regard to the latter question it has been a puzzler to me for many years—why is it that the teeth of girls coming to us from foreign countries, particularly Norwegians and Swedes, after they have been in this country for a year, melt like dew before the morning sun? Why is it? We have tried to answer this question, but no one has succeeded in doing so satisfactorily. The explanation that has been given is as satisfactory as anything that has been offered, and yet it does not fully explain. To my mind, this rapid decay of teeth in these girls may be due to a change in environment, a change in climate, a change in diet, and particularly the diet. The girls from

Norway and Sweden live largely on black bread, and I believe they bake bread only two or three times a year, and the eating of this bread causes such friction upon the teeth as to be very beneficial and which they could never get by the use of the toothbrush. This leads me to think that if we ate more of that black bread it would be better for all of us. If we would eat Milwaukee rye bread we would be better off. This bread is hard. It is bread that puts the teeth into action, and it is not only bread suitable for the stomach, but for its direct effect upon the teeth themselves, so that the coarse foods are one of the needs of today. Take the girls from foreign countries who come here. On their arrival they eat white bread, which is a great luxury in the old countries. Here it is a treat for them to eat it, and they avoid black bread. They eat fine pastries, and consequently their teeth are affected at once. This is one of the best reasons we can give for this condition of things, but it does not offer a satisfactory explanation.

The experiments made by the gentleman from Buffalo (Dr. Low), quoted by Dr. Johnson, may explain something that we do not know very much about as yet. There may be something in the chemical formation. It may be that the sulphocyanids are not in proper amount, and if they are in proper amounts, as has been said, they may play a rôle in arresting the development of caries. It will take years to find out the exact cause or causes of this rapid decay of the teeth in these girls, but in the meantime we can accomplish a great deal by using and recommending coarse foods, so that the teeth may do the work they should instead of the cook.

4. CONDITIONS OF SALIVA IN RELATION TO CARIES. THE VALUE OF THE CONTACT POINT.

Dr. G. V. Black was to have opened the discussion on this question, but in his absence Dr. George C. Poundstone was asked to do so. Dr. Poundstone said:

I expected to hear from Dr. Black on this subject, who would doubtless have covered it very thoroughly had he been present, so that there would have been small need for further discussion.

In regard to the saliva and its effect upon caries of the teeth, it has been found by many investigators that it is a vital factor, performing an important function, accelerating or decreasing the amount of caries owing to its composition. In tests that have been made of teeth that are particularly susceptible to decay, there have been found in the saliva very small amounts of the sulphocyanids, while in those mouths in which the teeth have shown little or no decay, there is always the presence of sulphocyanids in considerable amount. This you can determine for yourselves by mixing an equal quantity of saliva and distilled water and a drop of ferric chlorid, you will get a bright red color if sulphocyanids are present. Test this in the mouths of those patients whose teeth are practically immune to decay, and you will find in most of them the presence of sulphocyanids in the saliva. The administration of solutions of hydrocyanic acid in medicinal doses may be undertaken to increase the sulphocyanids in the saliva through the blood. The changes in the saliva noticed in the human mouth vary greatly from the normal, which is slightly alkaline or neutral to an acid saliva. In patients who are particularly subject to an acid diathesis, we usually find many cavities in the teeth, especially near the gingival. In these cases the saliva conditions are usually abnormal, the blood conditions are abnormal, and it is probable that through the blood the saliva gets its acidity or lack of normal alkalinity. It would therefore seem to me that a great deal of the remedy for faulty saliva would come through getting the blood into proper condition. We find that the blood is low in its alkalinity in most all diseases and in conditions of overfeeding. All forms of rich food will cause a decrease in the alkalinity of the blood, and consequently a decrease in the alkalinity of the saliva, and thereby a consequent increase in the amount of caries or conditions favorable to increase in the amount of caries in the mouth.

Dr. Johnson spoke of increasing the amount and improving the condition of the saliva. We find that the saliva can be changed from acid to alkaline by vigorous mastication. A piece of rubber chewed vigorously for a few moments will change the saliva from an acid to a decided alkaline reaction. The same is true in the mastication of food which would make it appear that one great point in preserving the teeth is the thorough mastication of all foods. As dentists, when we find mouths in which the teeth are badly decayed, it is our duty to look to the general condition of the patient, and do more than simply request of patients that their teeth be thoroughly cleansed and brushed, but let us point out to them the importance of paying more attention to the diet and the methods of masticating food. I know from my own experience in questioning hundreds of patients that the great majority of them bolt their food. A little care and good advice along this line will prove valuable in helping to preserve the teeth.

In regard to the second part of the question, the contact point, I think we are so thoroughly acquainted with that subject that we may simply say a contact point is necessary in all cases, and let it go at that.

5. "WHAT MATERIAL HOLDS FIRST PLACE IN THE TREATMENT OF DENTAL CARIES?"

DR. L. S. TENNEY:

With all due respect to the judgment of our committee, I fail to understand why they should ask a question to which there can be but one answer. As well might we inquire, "Does water seek its own level?" Who disputes the statement that gold holds the first place among the filling materials? Practically no one throughout the entire dental profession of the world. Gold is king. It has been tried; it has been tested; its merits have been proved and established by the labors of half a century, and let no man delude himself into believing that there is any other material that can approach it as a preserver of the teeth.

What is the question before us? It is not "what material is indicated in some special or unusual case," or "what material is best adapted to the manipulative powers of some individual operator," but rather the question is this, "What material is best adapted to the average case and in the hands of the average operator?" In other words, "What material has the widest field of usefulness?" What are the filling materials at our command? Amalgam, tin, cement, gutta percha—these may be passed by without comment. Nothing remains then but gold and porcelain. But what has become of porcelain? What is the status of this material today? Cling as fondly as we may to our early hopes, we must nevertheless admit that porcelain has failed to fulfill our expectations. Its fatal weaknesses are before us, and we have failed to overcome them. There are the friable and imperfect margins, the weak line of cement, the numerous difficulties of its manipulation, the trying shade problem and the uncertainty of its anchorage, and because of all these difficulties it has come to occupy a very narrow and a very limited field in our profession, and on this point also we are practically agreed. No man has the temerity to advocate porcelain for general use today unless it be some few dreamers who rose with porcelain's rising fortunes and have now determined to defend their shattered idol with their last expiring breath. But porcelain is gone, and today is fit only to be used for purposes of temporary oral decoration and not to protect teeth against the ravages of decay.

Referring then to the question before us, "What material holds first place in the treatment of dental caries?" the answer must be, can only be, gold. No argument is admissible. If, however, the subject were considered as to what form of gold holds first place, whether it be foil or whether it be gold in the form of inlay, we might find some diversity of opinion. The inlay is comparatively new, and has naturally attracted the attention of those who love to embrace whatever is novel and sensational. It is well that we have such men in our profession, for out of the great mass they produce that is useless, we come finally to sift out that which is meritorious and lasting.

It was so with porcelain. It will be so with the gold inlay. The inlay when properly and judiciously used is a blessing and a benefaction to our profession, and those we serve, but if ever used as extensively as its use has been advocated by some practitioners of the day, it will become a curse to us all.

I maintain that with the same degree of skill applied to the making of a foil filling and the making of an inlay, the foil filling will all things considered, be superior in the average case.

The extreme cases of restoration involving undue strain on both patient and operator, the inlay finds its place, but I hold that 90 per cent of the cavities we fill are of such size that both patient and operator should submit to the effort involved for the sake of the better results thereby secured. The time allowed for this paper will not permit me tc offer the several arguments I would wish to advance in defense of this statement, but I wish to submit the following:

An inlay is made and cemented into the cavity *en masse,* and in order to secure perfection in the completed filling there must be perfection in each of a long series of delicate manipulations. From the shaping of the wax model to the final casting of the metal there are numerous opportunities for defective manipulation and the defects may be so slight as not to be observed and yet be sufficient to invite early failure of the filling.

Foil, on the other hand, is built up pellet by pellet, the walls and margins of the cavity are constantly in view; we note the progress of our work. Failure to place one pellet exactly where we wish may be corrected when the next pellet is added, and then, when completed, we have our cavity filled with gold and not with part gold and part cement as is the case with too many inlays.

In conclusion, I do not wish to be understood as asserting that all foil fillings are good and all inlays bad, but I do assert that in my opinion the inlay offers far more opportunities for defective manipulation than does gold inserted with the plugger, and finally, in reply to the question, "What material holds first place in the treatment of dental caries?" I make most emphatically the only reasonable and logical answer—cohesive gold foil.

DISCUSSION ON QUESTION V.

Dr. William H. Taggart:

As to the question, "What is the best filling to save teeth?" I would say cement, if it can be protected. Is there a man in this hall who has ever seen or known of decay taking place under cement? I think you will say no. In other words, there is a chemical union. There is a cementation, a stopping of capillary attraction there which prevents decay from taking place under a cement filling. If the cement can be protected, as it can be by the modern inlay, then that is the best filling that can be put into a tooth.

Dr. Tenney in his paper said that "an inlay is made and cemented into the cavity *en masse,* and in order to secure perfection in the completed filling there must be protection in each of a long series of delicate manipulations." That is the weakest part of his argument. If he puts in a thousand pieces, he has a thousand chances of making a mistake. Gold in a sense is refractory when you put it in as a foil or as pellets, and the more refractory the pieces you put to place, the greater chance or chances you have of making these pockets and open spaces spoken of by Dr. Tenney. If we could find a gold that would go to place as readily as wax will do, we would say that it would be an ideal filling, but here, gentlemen, we have wax which can be put into the cavity, and it will absolutely be reproduced in gold.

There is a tendency for men who have the ability to use honeyed words and flowery expressions to do so in order to get a laugh out of you, but, gentlemen, why is it that this inlay is being taken up, not by the best doctors in dentistry, but by the best mechanics? Simply for the reason that they see the perfection that the inlay process is going to bring about.

Some forty years ago Dr. J. Foster Flagg, of Philadelphia, made the statement that "in proportion as a tooth needed filling, gold was the poorest thing to put into it." They say he was an advocate of amalgam; at the same time Dr. J. Foster Flagg was a good worker of gold. The men who did not believe in amalgam in that day misunderstood him and did not analyze what he said in what I have just quoted to you. In other words, he meant that where a tooth was badly decayed, it was in the very poorest condition for a gold filling, because it would be beyond the ability of any man to put gold into such a cavity, whereas he could put amalgam into the same tooth, so that in proportion as a tooth needs filling, according to Dr. Flagg, gold was the poorest filling material to put into it. Dr. Flagg told the truth at that time, because he could fill those teeth with amalgam, and could not fill them with gold. His statement held good up to the present time. I am going to make an assertion tonight which I think will go down with just as much force as the statement made by Dr. Flagg, namely, that in proportion as a tooth needs filling, gold is the best thing to put into it, and gold in the form of an inlay, because while the difficult cavities Dr. Flagg spoke of filling with amalgam were hard enough to be filled with that material perfectly, the cervical margin under the gum, on account of the softness of the amalgam, could not be smoothed and worked down as it should be, and after it would harden it could not be worked down, consequently even in these difficult cases he could not get a perfect amalgam filling. But such cavities can be filled today successfully, and the margins that are away down out of sight can be filled with gold with a cement lining under it. The gold inlay, to my mind, at the present day, is the ideal filling for a tooth.

Dr. Tenney alludes in a facetious way to the foolishness and temerity of any man who will stand up today and advocate porcelain. He scouts the idea. He fails to recognize the very saving quality of the cement underneath, and today is just as good a time to use porcelain as ever, if you use it with judgment. It has its place, and there will not come a time when it will be supplanted, because of its having that place, when we consider the saving quality of the cement which has always been talked about. They say in an inlay the cement is the weak point. Gentlemen, cement is the strong point of an inlay. An inlay by itself could never save a tooth if it were not for the cement underneath it. Let us take, for instance, a foil filling. You are familiar with the blue line that takes place around the foil filling, and it may be two or three years before you will actually have the nerve to take out that filling, especially if you have put it in yourself. (Laughter.) It does not take the same quality of nerve to take out a filling put in by some other dentist. You can make it a deep-dye blue if the other fellow has filled it. This blue line occurs because of capillary attraction having taken place. It seems in there and makes a defective filling. With a cemented filling capillary attraction ceases to be in evidence, because the union is very close on account of cementation. Cement, therefore, under a filling of any kind, is a saving.

Dr. P. B. D. Idler:

I believe Dr. Tenney made the statement that gold holds first place as a filling material in the treatment of dental caries. I cannot agree with him on that point, because I believe in the hands of the average operator either amalgam or cement will do more toward preventing decay than gold.

Dr. Taggart quoted Dr. Flagg as saying that "in proportion as a tooth needed filling, gold was the poorest metal to be used." He went so far as to put on his appointment cards, "No gold used." I believe that either amalgam or cement will give better results in the treatment of dental caries than either a gold inlay or a gold foil filling. How many fillings come under our personal observation that have been put in, say, within a year or a year and a half? You can take an explorer, stick it in anywhere around the margin, and almost tip the filling out. I have seen amalgam fillings and gold fillings put in the same mouth, under the same conditions, and the amalgam fillings, I dare say, would be good for ten years, whereas the gold fillings have come out.

6. How treat superficial dental caries?

Dr. A. F. James read a short paper on this subject.

This question can be answered in one word—prophylaxis.

The thoroughness of the prophylaxis treatment can vary so greatly that what one man might call phophylaxis another would not consider as such. So I shall describe briefly the treatment I have followed which has controlled these cases in my practice.

Where the caries extends through the enamel and very near the gingival margin, I cut away the gingival margin freely, extending it mesio-distally past the angles, rounding the remaining margin of the cavity, forming as nearly as possible a new enamel margin, then planing smooth the neck of the tooth and the surface which has been affected by the caries, then touching up all surfaces with round Arkansas stones in the engine. Following this with polishing wheels and pumice, finishing with wood points in porte-polisher for surfaces that cannot be touched with wheels.

The case just described might be considered as more than superficial caries, but I have followed this method successfully without recurrence of decay in extreme cases, and I have not inserted a dozen cervical margin fillings in eight years' time.

Some will, no doubt, ask the question, what do you do about the sensitiveness of the exposed dentin? My answer is prophylaxis, keeping these surfaces polished to a lustre with wood points so that rinsing would almost clean them, and teaching the patient to massage the gums with an even bristle brush, carrying soap into the mouth to make a lather which will do away with the harshness of the brush on the gums, and encourage the patient to do more brushing.

In cases where the caries has not extended through the enamel, but has only etched or roughened the gingival margin or caused the white chalky lines we so often see, I plane all surfaces smooth with planing instruments, remove all calcareous deposits from the necks of the teeth and follow with the now celebrated prophylaxis treatment, which I say is preventive dentistry and should be called a God-send to humanity.

The question was raised and a caution thrown out by one of our members during the discussion of a paper on prophylaxis last winter regarding the danger of injuring the dental ligament in the use of instruments, and this extreme polishing of the necks of the teeth in the prophylaxis treatment.

The question seemed a pertinent one and well worth heeding, and I have given particular attention to this danger to see if damage were really done to these tissues, and I can say that I have not found it to be true in any case, but that the tissues improve, they become firm and even hardened, under this treatment, and therefore from my clinical experience the polishing cannot be too extreme or thoroughly followed out, at least one would have more physical endurance than I possess in order to do damage in this way.

Dr. Sidney McCallin:

I agree with what Dr. James has said with reference to the treatment of dental caries of this nature. I believe in putting a new face on a tooth, as it were, and fastening it down. I have tried to do this, with some success. I have seen teeth in the mouths of patients in the office of Dr. D. D. Smith, where the eight anterior teeth, after years of treatment, presented flat surfaces instead of convex surfaces. The caries at the gingival line had been polished, ground away, and had received prophylactic treatment. Those teeth were not sensitive at all. After polishing I paint the surface with chlorid of zinc, as I think it reduces the sensitiveness of the dentin. The deliquesced solution is used and repeated often.

We have listened to remarks this evening on the mechanics of filling teeth by very learned authorities on the subject. I think "oral prophylaxis" is so far ahead of the mechanics of filling teeth that there is no comparison between the two. Reference was made to establishing a dental institute for the benefit of the public. If, in our colleges, there could be established a chair devoted to the teaching of Oral Prophylaxis, it would do more good for our dental students, and indirectly the public, than any other method of teaching.

As to brushing the teeth, I think a liquid alkaline soap solution is as good as anything, except in certain mouths which seem to require a heavy grit; some demand more grit than others. I think a pure antiseptic *liquid* soap, with an alkaline reaction, is a good means of establishing cleanliness.

As to the sensitiveness in working on teeth in this locality, I believe in many instances it would be a good plan to treat the teeth once a month, or once every two weeks, if necessary, by the prophylactic method, and after two or three months of such treatment one can work on those cavities without the patient suffering greatly. I began treatment of a case of pyorrhea about a year ago, the patient having a great deal of pus in the mouth and saliva highly acid. At the time the work was begun one could not touch the teeth with a cold instrument, on account of the sensitiveness. The other day I took a bur, burred into a sound tooth and took the pulp out for capping in bridge work. There was no sensitiveness until the live pulp was nearly reached. This shows what environment means. Some time before this one could not touch the outside of the teeth. This case demonstrates the effectiveness of prophylaxis. The putting in of a filling in places like this is attended with great difficulty, and it is almost impossible to get a good margin under the gum line. A gold inlay would be the best means of filling these cavities if we must fill them on account of being able to get good margin without polishing. However, after it is all said and done, the idea of prevention and abortion of this caries is far better than any idea of fillings.

7. THE LEGITIMATE FIELD FOR PORCELAIN INLAYS, AS SHOWN BY OUR PAST EXPERIENCE WITH THEM.

Dr. W. D. N. Moore was to have opened the discussion on this subject, but as he was absent his place was taken by **Dr. David A. Hare**, who said:

As to the legitimate field for the use of porcelain inlays as viewed from past experience, I would say that if we view the records of porcelain experts for the last fifteen or twenty years we would get an answer to that question, and I would particularly refer you to the article of Dr. Capon in a current issue of *The Dental Cosmos.* In this article he gives a review of his work for over eighteen years in the use of porcelain, and I am quite sure this record will convince the most skeptical that porcelain has its field in dentistry, and a prominent place at that. When we try to outline the legitimate field for porcelain, we must consider the personal skill of the operator. I do not know of any branch of dentistry where the personal equation enters so largely as it does in porcelain work. It is just as unreasonable for us to expect that the average individual, who knows how to mix porcelain bodies, will produce artistic and beautiful results as it is to suppose that the average person who can mix colors will produce a beautiful picture. There are cavities in the teeth where possibly one man will say that he cannot preserve the tooth with a porcelain inlay, while another man would get perfect results. For that reason it is almost impossible to lay down a hard and fast rule as to where porcelain should be used and where it should not be used. And it is also unjust and inconsistent for a man who feels that he cannot get good and perfect results from the use of porcelain, to condemn the whole system on that account. I do not think he is rendering his patient as good service by recommending some other material when porcelain is clearly indicated for certain cases. A conservative statement as to the legitimate field for porcelain would be that where it is used with discretion, and proper manipulation it can be employed in almost all cavities in the anterior part of the mouth, except in those end to end bites where the force of mastication will swedge over the gold of even a foil filling. In these cases I cannot imagine anything better than a gold inlay. I have seen foil fillings displaced from these cavities time and again, and it has only been gold inlays that have stood the strain, proving conclusively to my mind that a cemented filling is the king of dental operations.

There is one thing to be considered also with reference to the use of porcelain, and that is the dentist has to feel his way along. He has to find out by personal experience with porcelain what he can do with it. No man can lay down a rule for all cases. We all know that men cannot produce the same results in the same manner. However, with the modern technic in the preparation of cavities, and the modern facilities we have in the way of improved bodies, we ought to get far better results in the future with porcelain than we have had in the past.

There are so many good qualities to be mentioned about porcelain that I shall not attempt to enumerate them all; I will only speak of some of the most important ones.

In the first place, no one disputes the fact that, from an esthetic standpoint a porcelain inlay is far superior to any other material we have at our command, and no one, who has observed the application of porcelain, will dispute the fact that the gum tissue will take more kindly to porcelain than it will to any other material we have at our command. As far as permanency of the filling is concerned, I said a few moments ago that if you will read the article by Dr. Capon you will be convinced that porcelain is permanent. I have no reason to doubt the veracity of his statements, and I can say from my own experience that some of the most lasting and beautiful results I have ever obtained have been from large contour fillings in the anterior part of the mouth. Of course, there have been failures, and many of them, but there is always a reason for every failure, and if we would only stop to learn the lesson from those failures I am sure it would spur us on to greater endeavor to overcome those difficulties in the future. One of the chief things to be considered in this connection is the occlusion of the teeth, and one of the best methods of ascertaining the degree of stress is blue copying paper, suggested by Dr. Taggart some time ago. It is a most useful article for that purpose, not only in porcelain work, but for other branches of operative dentistry.

One of the greatest virtues that has been demonstrated by the cemented porcelain filling is the fact that it will produce permanent results. And I am sure that credit is due the porcelain inlay for paving the way for the gold inlay. I think it was the knowledge of what the cemented filling would do that inspired the ingenious mind of our distinguished colleague, Dr. Taggart, to work overtime in trying to perfect the system of gold inlays, and too much credit cannot be bestowed upon him for what he has done in that direction. I think it is a great blessing to mankind, and only the future years will teach us what he has done.

The claim has been made also that there is a tendency in recent days to lower the standard of manipulative dentistry by the use of gold inlays. Personally, I cannot see that that is true at all. I do not know of any branch of dentistry that requires a higher degree of manipulative skill or more close observance of the minutest details than gold and porcelain inlay work. Porcelain inlay work has served to elevate the standards of all dental operation. It has developed an artistic sense, both in the minds of our patients and in ourselves. With these facts before us, knowing that a cemented porcelain inlay can be used with such artistic results in the anterior teeth, and knowing that a gold inlay can take care of cavities in the posterior teeth, where the stress of mastication demands something stronger than porcelain, I cannot imagine a brighter future for the modern dentist than that he is living in a progressive age, and not in the dark days of uncertainty that our brothers before us had to contend with.

8. THE ADVANTAGES OR DISADVANTAGES OF PLACING A LINING OR INTERMEDIATE OF CEMENT UNDER AMALGAM OR GOLD FILLINGS. IS IT NECESSARY OR BEST TO DISINFECT THE DENTIN UNDER A LARGE FILLING IN A VITAL TOOTH, OR WILL THE BACTERIA BE DESTROYED BY HERMETICALLY FILLING THE TOOTH?

DR. ELGIN MA WHINNEY, who was to have spoken on this subject, was absent, and DR. E. W. ELLIOTT was asked to open the discussion. He said:

I do not think there is any question but what we all feel that a lining of cement is necessary under a large amalgam or gold filling. One reason for this is to prevent discoloration, especially with a large amalgam filling, or even with a large gold filling, the cement preventing the showing of the color of the amalgam or the gold through the enamel wall. Another reason, and perhaps the main one, why we should have a cement lining is to prevent the constant irritation from thermal changes which in due time would very likely cause death of the pulp. There are very few disadvantages. Everything is in favor of a cement lining. With the gold inlay it is necessary to use cement for the proper preparation of the cavity, and to enable the operator to remove the wax easily without changing its form.

Is it necessary or best to disinfect the dentin in all large fillings in vital teeth, or will the bacteria be destroyed by hermetically filling the teeth? I think it is always best to disinfect. It may be a fact that the hermetical sealing of the cavity will prevent the growth of bacteria, but how many cavities are hermetically sealed? Are they all hermetically sealed? Even if it is a fact that hermetically sealed cavities will prevent the growth of bacteria, we must disinfect all cavities, and I do not think the disinfection of a cavity means flooding it with alcohol, etc. It seems to me if we are going to disinfect a cavity, we should adjust the rubber dam and seal in the disinfectant, say for twenty-four hours. The remedy I use is modified phenol, which is composed, as you know, of menthol, thymol, and phenol, the menthol having an anodyne effect, and the thymol being penetrating and a disinfectant also. But if we expect to fill at once, then we should use a stronger disinfectant—a weak solution of mercury bichlorid, or a weak solution of formalin. If we are to fill the cavity at once, we need something stronger than the ordinary antiseptics so commonly used to flood the cavity. So it all goes to show that we should disinfect whether we feel that the hermetically sealed cavity is going to destroy the growth of bacteria or not. Acting on that principle, it seems to me we should not do things in a slipshod way. We want to avoid doing things too easily. The tendency generally is to prepare the cavity too hastily and to fill too quickly, and if we take more care, and if it appears that the discoloration has gone beyond the point where we feel we can mechanically disinfect, we should seal the disinfectant in for some time, and not rely on hermetically sealing the cavity to destroy the bacteria.

9. WHAT MOUTH CONDITIONS MAY CAUSE FACIAL NEURALGIA?

DR. F. B. MOOREHEAD contributed a short paper on this subject, which was read by Dr. L. Schultz, in the absence of the author.

To discuss the etiology of any disease in segments is not altogether satisfactory. To deal intelligently with any subject, one must address himself to the whole round of truth. We will, however, endeavor to conform to the limitations imposed by the program committee save for some mental reservations.

Of all the neuroses, neuralgia is one of the most frequent. The pathology is but little understood and the etiology is obscure.

For convenience in study and description the etiology may be divided into: 1, Central; 2, Peripheral.

There can be but little doubt that the former plays the greater role. It is the latter, however, which we are called upon to discuss. For further convenience we make another division into: 1, Chronic; 2, Acute.

For the most part chronic neuralgias are central in origin, while to the acute form, is usually assigned a peripheral cause. The rule is not without a few exceptions.

ACUTE FORM.

1—Irritations, especially those due to a highly acid saliva in a mouth in which there are marked erosions or receding gums. This is especially noticeable when the individual eats certain kinds of food, or takes hot or cold drinks. Prolonged irritations of this type may, when associated with certain constitutional disorders, give rise to a very disagreeable type of neuralgia. We need only mention in outline the irritation produced by fillings, inlays, crowns, bridges, partial and full dentures, etc. Barometric conditions are believed by some investigators to be worthy of notice. 2—Pulpitis, whether due to contact or hæmatogenous infections. 3—So called pericementitis. 4—Periostitis. 5—Pulp calcification, interstitial and nodular. 6—Exostosis (this subject alone would make an interesting study). 7—Difficult eruptions, not amounting to impactions. 8—Unerupted and malposed teeth. 9—Impacted teeth, especially lower third molars, though they are by no means the only offenders. 10—Fractures. Under this head we may have: A—Injury to the nerve trunk-giving rise to a neuroma. B—Pressure due to faulty reductions. C—Exuberant callus. 11—Injuries and wounds, followed by the formation of large amounts of cicatricial tissue. 12—Exposed sensitive dentin. 13—Obliterating arteritis. 14—Disease of maxillary sinus such as: A—Hydrops antri. B—Cysts. (Sub-periosteal and mucous.) C—Polypus. D—Empyema, especially the acute catarrhal type associated with acute infectious diseases. 15—Alveolar abscess. 16—Neoplasms, either by pressure or infiltration. 17—Granulomata, especially the gumma. 18—Mouth involvement in certain constitutional diseases. 19—Infections involving the bones such as osteomyelitis, and also infections of the soft tissues, glands, etc.

As to the etiology of "Tic Doulereux" or "Painful Tic" we do not believe that it is ever caused by local conditions "per se." Persistant and severe Neuralgia have been caused by local mouth conditions but have at once cleared up on removal of the cause. As to the etiology and pathology of trifacial neuralgia, we know practically nothing. Some take the positions that prolonged local irritation will eventually give rise to this condition, but we are of the opinion that the cause must be looked for elsewhere.

The above is but a brief outline, but may serve as a guide in the discussion. That any one of the above conditions may exist in the absence of any neuralgia is true; that any one of the above conditions may produce a neuralgia is equally true.

GENERAL DISCUSSION.

Dr. Olaf Lange:

I want to say a few words with reference to filling teeth with gold, amalgam, or cement. Gold is undoubtedly the best filling material if the patient is strong, the teeth are strong, and the dentist is strong. We have to choose our cases and use judgment. Whenever anything new is brought before the profession, we all make a rush for it, but only about five per cent of the new things are good. Amalgam may often be just as good as gold, granting that that you have good amalgam and know how to manipulate it. If the filling is subject to great stress of mastication, then gold is the thing, and if a tooth is very much broken down, a gold inlay is a most excellent thing; but it is a waste of time and it is foolish to put gold inlays in small cavities. However small the cement lining may be, it will be washed out in some instances. I have seen cement fillings that have lasted under extraordinary conditions, but they are exceptions. A cement lining is a good thing in large cavities, but if a dentist cannot seal a cavity right with gold he should go to school and learn over again. I think I can teach a man with fair mechanical ability in two weeks to fill a tooth with gold and fill it right. All these filling materials are good if they are used properly and rightly; but it takes skill, it takes patience. But gold is the best.

Dr. J. S. Marsh:

One word about prophylaxis. I have been called a scrubber of teeth, and have been charged with wearing teeth all out because I used pumice. I use pumice on the gums between the teeth wherever they are loose, and not only massage the gums, but have my patients do so every night, if they will. I have some old patients who have lost many teeth from the accumulation of tartar. I make two divisions with regard to tartar, one absorption and the other a necrotic process.

I would like to say a word or two in regard to filling teeth with non-cohesive gold. If you fill teeth with non-cohesive gold, and want to protect the enamel so that there are no blue spots, carry the cohesive gold so that it will keep the non-cohesive gold against the wall. I have filled teeth with non-cohesive (Abbey's) gold, and cohesive gold combined, and they have stood for thirty and forty years without any discoloration.

I have been much interested in what the various speakers have said tonight, and as to cement fillings, I have put in such fillings with Justi cement that have been intact for seventeen years. If you are going to use cohesive gold entirely for a small cavity, fill it so that the filling will come out easily and cement it in afterwards. The tooth will last longer.

Dr. Herbert A. Potts:

In regard to Dr. Moorehead's paper, I wish to emphasize one point with reference to the many conditions in the mouth that are productive of facial neuralgia. It seems that a very trivial condition of the mouth, when the patient is suffering from some constitutional trouble, is provocative of this disease, and in considering these cases we should try to find out whether it be poisoning from lead or whether the trouble be due to luetic infection of long-standing, or to anything which will render the fifth nerve susceptible to this continued irritation and thereby be the exciting cause of the trouble.

In regard to the pathological condition found, recent investigation has shown that there is in most all cases of neuralgia a neuritis, and as this disease is found in a large per cent of cases in the middle years of life, arteriosclerosis plays a great part. Pathological sections of the nerves in these cases show changes in the blood vessels and the condition of arteriosclerosis in connection with the treatment should always merit some of our attention.

Dr. A. H. Murdow:

There is another reason not touched upon by the essayist to account for the extensive decay of the teeth as found in the mouths of girls coming to this, from foreign countries. I refer to environment, but in another sense than spoken of by Dr. Johnson. These people, especially those from Sweden and Norway, in their home country work outside (in the fields), and on coming here obtain employment indoors, as house servants. This may also be a factor in the production of tuberculosis which appears to be so prevalent.

I am sorry Dr. Tenney took the position he did with regard to inlays. It depends a great deal on the operator and the way he uses or puts in the filling, and in the case in which he is using it, and when anybody says that a cast gold inlay is not going to stand or that a porcelain inlay is not fit to be used, I say he does not know what he is talking about. There is a place for all of them, and providing the work is well done you will find them there in the years to come.

DR. L. H. ARNOLD:

I want to add a few words to what has been said. First, about these girls coming over from the old country and the rapid decay of their teeth. This is probably largely due to their changed environment and diet. The fact that they formerly lived on coarse, rough food and worked largely out of doors undoubtedly had a great deal to do with the reputed good condition of their teeth before they came over; but when they come to this country, live on soft, finely ground, rich food and work indoors all of the time, their teeth decay rapidly, because they no longer have the natural cleaning from the coarse food and no artificial cleaning is given to take its place.

I want to say a word also with reference to the paper read for Dr. Tenney. His remarks must be taken with the understanding that he is an expert cohesive foil operator and dotes on that work, but is an amateur cast gold inlay operator, and not nearly so expert at inlays or at foil making and his deductions against inlays are certainly formed from his own limited inlay experience.

Dr. Taggart said, or perhaps only intimated, that wax will go to the end of a cavity without trouble. I would like to see any man put it there every time without using the utmost care and attention to details.

DR. HAROLD H. HAYES:

There has been a statement made this evening in regard to soft gold fillings which is misleading. There are not very many men any more who are working soft gold extensively, and when a dentist or essayist tells us that soft gold can be easily placed, he is telling us something we should consider very carefully before we try to place it easily. It is one of the best filling materials, without doubt, when used properly, and in careful hands. But do not be misled in thinking of it to cover margins, as it takes great manipulative ability to do that, and when you are using gold a combination is by far more preferable.

With regard to the cement proposition, spoken of by Dr. Taggart, I would say, for God's sake, who ever gave any man the sole right to use cement under an inlay or any other filling? The cheapest operator we have ever had in dentistry can put five cents worth of gold over a cement filling and make it last as long as the best operator who fills a cavity full of gold, and with a little undercut filled properly adapt the filling, and, of course, get a blue line and have to cut out the old one once in a while. Gold is as good as porcelain where indicated. If you keep the cement away from the margins and cover it up, there is no better filling material than cement, but Dr. Taggart failed to tell you to go further with the inlay and burnish it over with cement and protect it. When you protect the cement you have a perfect filling. This puts me in mind of a man representing a dental supply house who came into my office. I said to him, give me some barbed broaches. I want to remove a pulp. He said he had nothing but smooth broaches and pulp-canal cleansers, and asked whether I could use a cleanser with which to remove the pulp. I said I didn't know, but I would find out. That is the way with the cement proposition. Use cement as a filling material, and use it to the full extent to fill proximal cavities, but cover it over with whatever material you think is best for the individual case. Would any man in the medical profession think of asking a physician what is the best medicine to give a patient, to say nothing else? In filling cavities in teeth we must exercise judgment, and the filling material is governed largely by the cavity we have.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT LONDON, 1908.

DISCUSSION OF DR. JOHNSON'S PAPER, "A FUNDAMENTAL NEED IN DENTAL EDUCATION."

Dr. George Cunningham, of Cambridge,

Was surprised that the author had not referred to what had been already published by the International Dental Federation, who had published a minimum and what they ventured to call an ideal curriculum. For years the principal teachers of the dental world had been meeting in the federation and discussing the very important question of dental education and had already obtained a kind of standard dental curriculum. He was glad the question had been raised in the society from a more or less independent point of view, and he was sure the paper would have its effect upon the work of the F. D. I. Shortly the federation would be meeting in Brussels, and it was the intention that the conclusions of the committee on education should go to the congress at Berlin for thorough discussion. There was no desire to put manual training in an exaggerated position, but as a society they would endorse the conclusions of the essayist when he said that it was no good having theory without practice. He thought the author took a very sane view of dental education, and he quite agreed with the essayist in advocating a higher qualification for admission into the profession. He ventured, however, to suggest whether it would not be possible to add something to the present demands made throughout the world and give manual training as an alternative to a dead language like Greek or a living one like Esperanto.

DISCUSSION OF DR. WRIGHT'S PAPER ON "GINGIVAL MASSAGE."

Dr. J. W. Gale, of Cologne,

Who, in the absence of the essayist, read the paper, said that Dr. Wright was one of the organizers of the society, and for ten years his name only disappeared once from the list of founders. He was treasurer for four years, secretary for three years, vice-president for one year, and president for one year. A man who had worked in such a way for the society and still showed his enthusiasm was worthy of the respect of all the members.

Dr. William Dunn, of Florence,

Said his father, who had been practicing for about sixty years, had carried out practically what the essayist advised, not only gingival massage, but massage in general, and he found himself at the age of eighty in exceedingly good health. There was nothing the matter with his gums and he had never suffered from pyorrhea or anything of that kind, and hygienically he was quite a young man.

Dr. W. J. Younger, of Paris,

Thought the essayist had made one mistake in advocating massage of the gums with pyorrhea deposits. It was hardly possible to do a worse thing. When the deposits had been carefully removed then massage was of the greatest importance, but if massage was resorted to before the deposit was removed it only increased the irritation and destruction of the gum.

Dr. Gale, of Cologne,

Did not suppose that any one would massage the gums over salivary calculus or any roughness. That would be understood.

Dr. W. J. Younger, of Paris,

Said he had often heard it said that it cured pyorrhea, but when the deposits were removed of course the pyorrhea was cured, and the only thing remaining was to bring about attachment between the gum tissue and the teeth.

The President

Said that anything that had to do with massage in connection with pyorrhea was a thing that ought to be throughly considered. In his own practice he had followed out the treatment first suggested to him by his brother. In connection with pyorrhea treatment he thoroughly agreed with what Dr. Younger had said, but with regard to massage he went further than the general practice. In cases where there were great pockets formed between the alveolar process and the roots of teeth it had been the custom of his brother and himself to break down the alveolar process, and that was more or less easy, whether over the buccal roots of the molars or in the front teeth, but in the palate it was sometimes very difficult and required a great amount of force—and also force to manage the patient. It was one of the most successful treatments he had ever undertaken. He used a pair of pliars made to hold a surgeon's needle, and, taking a ball of amadou, with great force he pressed on the gum until the process was felt to be actually breaking away. The gum healed in a very short time, and he believed there was a deposit of bone cells such as would take place in an implantation or in any case where the process was disturbed. He used as an antiseptic an iodid of zinc preparation, strongly antiseptic and at the same time astringent—not the ordinary officinal iodid of zinc.

Dr. Schaffner, of Florence,

Asked how the process was broken with amadou.

The President

Said the amadou was arranged in a ball on the end of the pliers.

Dr. George Northcroft, of London,

Said it was supposed that there was no bony union in fractures of the upper jaw. He could conceive it possible that there might be a stronger fibrous band passing around a loose tooth in such cases as described by the president, but it was going a little too far to imagine bone cells were thrown out after the fracture of the alveolus.

THE PRESIDENT

Said he had the privilege of making some similar observations at a meeting of the Odontological Society of London some little time back, and he heard a few days after that one of the eminent men there thought that he had made statements which he certainly did not mean, and that he had never done such a thing in his life. Dr. Northcroft's remarks, in face of the many years' experience of implanted teeth, were peculiar. Certainly in the case of an implanted tooth there was a disposition of bone cells, and the tooth set actually in the bone, and he believed that very much the same thing happened in the case he had spoken of.

DR. YOUNGER, of Paris,

Said that in implanations there was certainly a deposit of bony tissue.

DR. JENKINS

Said that Dr. Wright, the essayist, was not only one of the founders of the society, but he had always remained deeply interested in its progress. It would be an honor to any society to receive a communication from so distinguished a source, and he therefore begged to move that the honorable secretary be instructed to convey to Dr. Wright the grateful thanks of the members for his valuable and inspiring paper.

The motion was seconded and carried unanimously.

WISCONSIN STATE DENTAL SOCIETY, LA CROSSE, JULY, 1908.

DISCUSSION OF DR. ALLEN'S PAPER, "THE ART OF INVENTION."

DR. H. L. BANZHAF:

It would be impossible to discuss this paper and give it the credit and consideration it deserves on so short a notice, but I wish to congratulate the essayist particularly upon two things. One on the fact that he has given us the opportunity of listening to a paper which, as a literary production, is a very meritorious one. I am very glad my old friend, Dr. Allen of Kansas City, was able and willing to sacrifice his time to come here and read a paper before this state dental society. The other is upon his manner of treating this subject. I have heard a good many papers in my day written under the caption, "Art and Invention," but to my knowledge and the best of my recollection I do not recollect of ever having heard it treated in the manner in which the essayist has treated it. He has told us what he considers art and invention to be, and you will recall that he dwelt at some length upon the imagination. I have often heard men declare that the man who is imaginary is supposed to be a visionary sort of a chap, but I think that you will agree with me when I say that a close study and analysis of what the imaginary mind really is will lead you to the conclusion that there is no dentist who ever made a success of the practice of his profession who did not possess an imaginary mind. So I say that of all professions I think dentistry has profited greatly from the productions of the imaginary mind, and firmly believe that in life, and in all the walks of life, there are three things which the successful man must possess. He must possess imagination to conceive, judgment to direct, and courage to execute.

DR. E. C. FRENCH:

I think the best compliment that I could pay to Dr. Allen is to make a motion that this paper should be printed in full, and each member of this society have a copy of it. He has touched upon a subject that has awakened my soul to a line of thought. He has carried that thought out more fully than I shall ever be able to carry it out to my own satisfaction. He has touched upon a spiritual line of life that only time can bring satisfaction to the man who studies the subject. I want to thank Dr. Allen for this able paper, and I know that every member of this society who has listened to the paper feels deep down in his heart as I do.

DR. CHARLES ALLEN:

Gentlemen, I thank you for your kind appreciation of my paper and the discussion. I am very glad to have been with you today. This is my first attendance upon any northern meeting. I have attended a good many in the south. I hope on some future occasion I may have the privilege of meeting you again. I thank you.

DISCUSSION OF DR. WRIGHT'S PAPER, "DENTAL LEGISLATION."

DR. C. L. BABCOCK:

Owing to some little experience which I have had in the matter of securing amendments to the dental law, I approach the subject, even in the way of discussion, with some hesitation and feeling of timidity. I think we will all be agreed that it is an important subject, and one in which we are all interested. While it is a matter oftentimes of considerable difficulty to secure just the kind of legislation which we think we need, yet it is a subject of such importance that this society should not shrink from assuming the duty and the labor of such work. I have sometimes thought that the dentists of the state, and the public at large, do not fully appreciate the work of our State Board of Dental Examiners, but I believe that on a few moments' consideration of the conditions that exist today in the state of Wisconsin, and comparing them with what has existed within the memory of many of us who do not consider ourselves old men yet, that we must realize that the standard of education, the scientific and professional requirements, and I would add the standing as a whole of the profession, has been very much improved, and I think it is largely due to the effect, direct and indirect, of our dental law, as executed by our State Board of Dental Examiners. I am very glad, for one, to have a member of the board present a paper to this society. I think that it is a custom which ought to become established. We ought to have that annually in order that we may all become more familiar with the work of this board. We ought to feel that the board is our representative. The board stands, in a public way, to represent the best in the dental profession, and also, in a judicial way, to protect the public at large.

There is one point that of course was not touched upon in the paper, but which I wish to take this opportunity to speak of. The State Board of Wisconsin is almost, if not the only, board in the United States which receives no direct compensation. I think it is not fair for men to do work as important as the work of the board, to give up a considerable number of days to that work, and not have a fair compensation. I would advocate a fair, moderate, per diem compensation for every day actually engaged in the work of the board. Not very long ago I had occasion to meet the Illinois State Board, and I found that they met in session and remained in session not only during the time of examination, but until every paper was looked over and corrected and considered by the board. Now when you consider the number of examinations which are held, that means the sacrifice of a good deal of time. The Illinois board is paid a per diem for that work, and I believe it is only proper that our board should be paid in the same way. I am inclined to think sometimes that our law is a better law than we think. Perhaps it is because of the progress of public opinion that educational requirements are being raised without the direct acts or power of dental boards. I certainly for one am in favor of higher educational requirements for entrance to dental colleges, and if the legislature, upon the request of a committee from this society, saw fit to definitely state in an amendment to our law some higher requirement, I should be in favor of it, but whether they do or not I believe that that higher requirement is bound to come. What I am more interested in is a wider knowledge among dentists, a greater interest in the subject, and I believe that that in itself even will be a more potent force toward the real establishment of the requirements and of the qualifications which we desire.

The question of reciprocity has been mentioned, and it seems such a fair proposition that it need hardly be more than mentioned to meet with approval. When two or more states can meet upon a common basis of a high standard of requirements for the practice of dentistry it seems only fair that a man having once met those requirements and established himself in any community, that he might be free to practice his profession in an adjoining state, which makes the same high requirements.

DR. W. C. WENDEL:

The subject before us is of great interest to the entire dental profession of the state of Wisconsin, and I am delighted to hear that this paper has emanated from one of the Board of Dental Examiners, asking for reformation and improvement in the dental profession. If the state board were angels themselves, and were free from wrongdoing and free from errors, I think that we might follow in their footsteps. The essayist made a reference in the first part of his paper to assistants in offices. I certainly think he is right in that matter. It is customary to have assistants, who practically take the place of a regular licensed dentist, that is, in an earning capacity. I judge that was the essayist's thought or idea.

DR. J. J. WRIGHT:

Operative assistants.

DR. W. C. WENDEL:

In an operating way? An operator with no license?

Dr. J. J. Wright:

Yes, operative assistants.

Dr. W. C. Wendel:

How would you differentiate?

Dr. J. J. Wright:

I would differentiate between a man conducting a business and your office girl assisting you in the chair. I would consider a man who ran a chair in your office, never referring to you perhaps about patients or his work, as an operative assistant without a license.

Dr. W. C. Wendel:

Very well. Then the essayist certainly does realize that those conditions exist, and he would like to have us remedy that evil. There is the unfortunate matter. As I understand it, the state board has taken the position in this matter that they do not try to prosecute an offending dentist, but they want all the evidence brought in by a fellow-practitioner, perhaps located in the same locality. Now there are but very few practitioners who want to try to create a disturbance or a feeling in their own locality; that is, to antagonize a fellow-practitioner. It is very unfortunate in that respect, because if I have a fellow-practitioner who is perhaps a real honest, pleasant gentleman, who has also friends, perhaps more than I have in the community, naturally I do not wish to make this charge against him. If the board could give us some remedy to reach these evils without placing the immediate practitioner in antagonism to his fellow-practitioner you could perhaps modify or eliminate the trouble. I think the board ought to try and help out the practitioner. They simply say: "Well, if you will bring a charge against an individual we will investigate it, and if we find sufficient evidence we will prosecute the case." The board simply acts in conjunction with the attorney, and the other man is practically the prosecutor, and he gets the brunt of the feeling and sentiment of the practitioners.

In regard to higher education we have been unfortunate in many ways. I do not see how it is that the dental profession has continually taken the position that their man, in his elementary branches; for instance, the high school graduate or the second, third or fourth year high school individual, should be more deficient and the requirements lower than in the medical or legal or theological profession. As our professor in anatomy at one time said: He couldn't see any reason for it, and he thought it was an injustice to the dental student that he should not pass the same requirements as the medical. It placed the dental in an inferior position; that he did not have the mental faculties to grasp these questions. He didn't see any reason why the dental student should not be as capable of passing the examination as the medical student. I agree with Dr. Wright and Dr. Babcock that our elementary branches ought to be advanced in unison with the other professions, theology, law and medicine. There is no reason why this should not be done. With the curriculum the same in the different schools I cannot see any reason why a graduate of the states of Wisconsin, Illinois, New York or Pennsylvania or any other state, if he has a license from that state to practice, should not have a right to practice in any state in the Union. I cannot see why, if he has passed that examination and the commonwealth of Wisconsin recognizes him as a full-fledged practitioner, he should not practice in the state of New York or any other state. Certainly our national dental societies recognize you as a delegate. You have the privilege and right to discuss subjects upon their floor, and yet when you knock at their door to practice in that state they exact an examination of you. Now we raised the question some years ago in regard to Germany. We have in our land the greatest dentists in the world. Why shouldn't they have a perfect right to present their diploma and practice in a foreign country? Now consider for a moment that you are asking of a foreign country what you will not grant in your own country. How can you knock at the doors of European countries and ask for admission when you will not permit one of your practitioners to enter another state to practice? If you change and reform this matter, you would have a right to knock at the European countries' doors and ask for admission.

I think the schools should exact more of their matriculants. They ought to fight for the four year high school clause. I think they ought to try and bring out a better product and seek for better material, but they look a great deal on the financial side of this matter, and they can secure perhaps more students by not exacting these higher requirements. I appreciate their position perfectly, and perhaps if I was in their place I would do the same as they do, but that does not signify that we should not fight for what we think is right.

Dr. Babcock calls attention to the fact that we ought to compensate our State Board of Dental Examiners. I see that as the practitioners increase in the state we have somewhere about 1,200 licensed dentists in this state, and they pay into that fund annually one dollar, without the newcomers, and those that are examined. I do not know how much their income is, but I will say that that board has successfully, up to the present time, used up every cent of that money—or is it still in the treasury? I do not think they have been philanthropic enough, or had so large a surplus that they have donated it to some charitable institution. I think that they have used it up.

Another thing is remarkable, and that is that so many practitioners have a desire to act upon that examining board and they fight vigorously for it. If they are satisfied with that little compensation that they receive—I guess mileage and a per diem while they are in session—they have a pretty good time out of it. They can enjoy golf with us and numerous things, just as well as we can. When we come here and we want to have a good time we generally have to pay for it also, and we receive nothing from our fellow practitioners to help us along. However, I will say that I think it ought to be the duty of every practitioner to work in harmony with the board to secure just laws. Every time there has been a measure brought up somehow the dentists have had a great deal of trouble in passing that law. There is always one factor fighting here or there, or there is something to interfere with it.

In conclusion I want to say that I think we all ought to stand side by side with our state board, and as long as they do their duty I thought we ought to support them in every way in the matter of legislation. I think they are trying to do what is right for the purpose of upbuilding the profession.

DR. H. L. BANZHAF:

I do not desire to discuss at great length the recommendations made in the paper which the president of our State Board of Dental Examiners has presented. I desire, however, to go on record as expressing my approval of every recommendation he has made. I would like also to say that I am entirely in favor of high school graduation as a requirement for admission to our colleges. The school which I have the honor to represent is not afraid that the standard for dental education will be raised too high. I am very heartily in favor of reciprocity, and I do not now recall anything that I could criticise in this paper. I wish, however, to also mention something that Dr.

Babcock's remarks suggested to me. I think that the State Board of Dental Examiners should have more funds with which to discharge to the fullest extent its duties. I think at the present time too much time elapses between the examinations and the time that the reports are made to applicants for a license. At the time when I had the honor to serve the state of Wisconsin as a member of the State Board of Dental Examiners it was our custom to make immediate report, or within a few days, but at this time the test for license has been materially increased, thereby adding additional labor to the members of the board, so that at the present time, considering the practical tests which they must give and the correcting of papers, it is entirely impossible for them to reach a conclusion within two or three or four weeks taking into account their own interests. So I think that the suggestion which Dr. Babcock has made is entirely proper and a very good one. I think the members of the State Board of Dental Examiners should have sufficient funds at their disposal so that they can remain in continuous session until report can be made to the applicants for license, whether they pass or have failed. It seems to me that is entirely fair. Under the present arrangement they are supposed to come to Milwaukee, or wherever they convene, and they work one entire week, for which they get nothing. They lose their time. I know how it is by experience. When they go home they find their appointment book packed with appointments, and they immediately set about trying to regulate private affairs. In ten days or two weeks they can reach the papers, so the young men who desire a report on their examination are, it seems to me, unnecessarily kept wondering whether or not they were able to meet the tests. I wish in conclusion to address myself to my friend, Dr. Wendel. Now, really, you would think that Dr. Wendel was very serious perhaps, but I believe you have misunderstood him. I think he has done himself a very great injustice, and I don't think he meant quite all he said. If there is one body in this country that has done much to raise the educational standard of dentistry it is the National Association of Dental Faculties, assisted by the National Association of Dental Examiners. It is unfair to charge the colleges with a mercenary motive.

Dr. W. C. Wendel:

I received a communication just about noon relative to the same matter that Dr. Banzhaf made the remark about, the students being anxious and desirous of understanding whether they have passed their examination or not. From this letter which I have I would judge that the board has not notified the men that they examined in June, whether they have passed their examination or whether their credits are all right or not, and they are very anxious to know whether they have passed, so that they can get out into the field and begin. Perhaps Dr. Wright will answer that.

Dr. P. B. Wright:

I haven't a great deal to say. I simply wish to compliment Dr. J. J. Wright upon the able way in which he has presented this paper. I think that his points are well taken. The ground has been pretty well covered in the previous discussion, but I wish to express myself as being heartily in favor of the increased requirements for admission to colleges. I am pleased to say that the school with which I am connected has the honor and distinction of being the first in Wisconsin to adopt the high school requirement for admission to its courses.

As to the reciprocity code I am heartily in favor of that, having had personal experience, and having been obliged to undergo the necessity of taking an examination. It is quite a hardship for a man who has not been in practice for ten or a dozen years to review the subjects on which he has to be examined. It is not only a source of great mental anxiety, but it also puts him to considerable expense and loss of time. In my own case I went to California, and under their laws was obliged to wait six months before being allowed to practice—not allowed to go in as an assistant in an office. I think that should be taken into consideration, and men should be allowed to practice and not lose so much time. I think the rest of the points in the paper are very well taken, and I trust that in the near future legislation may be enacted which will carry out his suggestions.

Dr. E. C. French:

Many things have been suggested. In the first place, does the dental profession consider themselves philanthropists? If that is so I feel that I have contributed to the philanthropic cause as much as I can stand, and I presume there are many that feel the same way, that we have contributed to the public in work that has never been paid for. Now I dare say that there are not ten men in the state of Wisconsin today that are practicing dentistry purely for the good of the public. I am not doing it. I am practicing dentistry to get bread and butter. But there is an honorable way of practicing dentistry. We want to consider this matter fairly and squarely. The paper is all right, and I agree with it heartily. I do not care how much your preliminary educational requirements are, but I want to tell you that preliminary education does not make a dentist. A college educated man who is not a mechanic cannot serve the public unless he serves them in the same capacity that the preacher of the gospel does. He may educate the people by fine speeches and so on, and with his eloquence he may get the public aroused. Now I would go a little farther than that suggestion which we have had here of requiring them to have a high school education. I would make them have a high school education, and then I would require them to go into some mechanical institution and study one year and find out whether they have any mechanical skill or not. I was on the state board for six years, and we did not wait six months before we let the applicants know whether they could practice dentistry or not. We let them know before they went home, unless it was some special case that required some outside looking after.

Dr. J. J. Wright:

How many candidates did you have?

Dr. E. C. French:

If we didn't have but two we had a good time in examining them. We kept them to work all the time. I am not finding any fault about that, but there were men before us while I was on that board, and I can think of one or two who are very highly educated, what we call more than a high school education; they had gone through high school and they had gone through some seminaries; that is, they held their certificates—one of those men is practicing dentistry today in this state. I have not seen him personally since the examination, but from dentists who have practiced in his vicinity I learned that mechanically he cannot do anything. Intellectually he can tell you everything. Now I know of some things he has done that are good, but it is not along mechanical lines, but through his chemical education. Make your standard high as to preliminay education, then let your dental colleges when they take a student find out whether he knows anything about mechanics. Here is the question before us: Can we as a state dental society and with the state law require something more than just a preliminary examination in mathematics and physics and things of that kind? If a man is a natural mechanic and has all this education he is so much better. What is education? Every man is getting an education on something every day. It is not the man that has got the most book education that is the best educated man. We see that illustrated in our legislature and in every walk of life.

Now on the subject of reciprocity. I say if a man is qualified to practice dentistry in the state of Wisconsin he is qualified to practice it anywhere that the American flag floats, or should be, and I don't believe there is a law that can prevent it. I believe when you grant a man the privileges of American citizenship in the state of Wisconsin he is an American citizen, and you cannot take it away from him, and I do not believe under the constitution of the United States you can stop me from practicing dentistry where the American flag floats if it is ever carried to the supreme court. Now let us have a committee appointed to have the law revised and see that they get it in shape so that when the first day the legislature meets that can be put before the legislature and get it through in a hurry. The trouble is with the dental profession that we are dilly-dallying too much.

DR. KYLE:

I wish to compliment Dr. Wright on his paper. Some two years ago, I think perhaps it was, we received a communication from the state board requesting us to push among our representatives the point that each applicant for a license should be a graduate of a dental college.

DR. J. J. WRIGHT:

It was not by the board. It must have been some other body.

DR. KYLE:

I remember answering it in the negative. I believe an applicant coming up to you for a license should be examined on his merits, and the same merits I believe should apply when he goes to the dental school and makes application for membership. I agree with Dr. French that he must first be a mechanic. I believe that the reason a large portion of the men whom our dental schools turn out are found out of practice at the end of a few years is because they were not qualified with the mechanical genius necessary. Now I happen to be from one of the Philadelphia schools, of which good old Dr. Garretson was at the head. I know that was not a mercenary school. I know, Dr. Wendel, the school from which you came, the University of Penna., had an advantage over us; they were supported by the state.

They were independent of the $100 that I might pay in there entirely. I believe our schools should be supported by the state. I believe our dental schools should be a portion of the university. I think a move is now on foot to make the medical school part of the university, then the deficit would not fall on a few men, and we could give our schools a high standard. In going to the state university you must either show that you are a graduate of a high school or pass a satisfactory examination. I believe that when they apply for examination to the dental school that the secretary or the members of the faculty can size that man up as to his qualifications, both in a mechanical way and in an intellectual way, but the point I wish to make clear is, agreeing with Dr. French, that that man should be of a mechanical turn of mind. I have had the opportunity to start six young men in the dental profession who have gone to the schools, and the first qualification I insisted on was that they should be mechanical. You cannot make a dentist unless he is mechanical to start with. I think he should have a literary education to make of him a gentleman, the man in society that he should be, and to have the right influence in the community.

Dr. Rudolf:

There are two things that I want to discuss about this paper. One is "mechanical" dentistry, and the other is relative to the State Board of Dental Examiners. If the state board are there for the purpose of protecting the public they should have the right to disqualify a practitioner after practicing a few years, because then they have a much better opportunity to judge of the matter than they have before.

If you look in Webster's Dictionary you will find that mechanical means "things done without thought." There are a lot of just such dentists in the country. If you go in the clinic room you will find a whole lot of work done mechanically, without thought. Personally I do not believe that there is a single thing in dentistry that is mechanical, because you have to use brains in everything you construct, I don't care whether it is a crown or an amalgam filling or what; there is nothing about it you can do mechanically. You might be able to be a mechanic and drive nails and not be able to practice dentistry. You have to be an artisan to construct from your ideas, but you cannot do it from the line of a mechanic. Your mechanical dentist is the one I think we ought to kick out.

Dr. Federspiel:

When you are making a crown it is the effect and not the cause. Isn't it necessary that you should have scientific knowledge?

Dr. Rudolf:

Certainly, you have got to diagnose your case. It requires more brain to tell a man what should be done than to go and do it.

Dr. Warren B. Hill:

This question that is up for discussion is very timely, and I agree with Dr. Babcock that these questions should be discussed thoroughly at every meeting of your association in order that the whole profession may keep in touch with the situation, and not have new things sprung upon them occasionally once in five or ten years, when the laws become so out of place that it is necessary to change them. I wish to compliment the essayist on the outline he has drawn of the needed legislation, for it is apparent that these are all questions that are already apparent. There is nothing radical about it, and the very reason for bringing about these amendments to our laws, and perfecting them, is so that we may have reciprocity; as far as we are concerned in this country as between states our relations are just as foreign between one state and another as they are between Wisconsin and Germany or Holland, for every state has vouchsafed in the constitution a right to maintain its own police and health regulations, and as a consequence it is necessary if we would have reciprocity that we have uniformity in our laws, and therefore the question of keeping our laws properly amended is an important one, and that should be done in a conservative manner, as outlined in this paper, so that they would be equal and consistent with the other laws of various states. Then reciprocity would become a very easy matter.

There was one question in the essayist's paper that I believe has not been touched upon in the discussion, and that was the inadequacy of the fees at the present time. I believe that one improvement that could be made, not only in the dental customs here but the medical as well, would be to take a longer time for the examination of the product of our schools, making the examinations as comprehensive as possible and more particularly along the lines laid out by Dr. French, in which he would have them demonstrate that they were good dentists. They would have a better opportunity of judging whether they were scientists as well as dentists; and then, if that became a fact, the colleges themselves would use great care, not only in the admission of the proper students, but in trimming them out from time to time when they found that they were going to be unfit to go into the practice. In that way we would have a better means of elevating the standard, and at the same time of not working a hardship upon the young men who had it in them, but at the time of entrance into the school had not had opportunity of having it brought out of them. The colleges would become developers of better and greater things in the students, and the boards would get better applicants for examination, and the state would get better dentists to practice in the commonwealth.

Then I would say in regard to the law itself: It is not common to dentistry or dental laws alone that there is difficulty in getting a law through the legislature. It doesn't make any difference what law you wish to have enacted by a legislature, it is a difficult matter to have it survive and pass through. The moment that there is a wrangle in the profession from which it emanates, just so much harder is it to get it through, but I would bespeak for the law that is to come before our next legislature less trouble, because there seems to be a unanimity of feeling in this body, and when the law is drafted by a representative body, so that it will meet with the approval of a united profession and is moderate and conservative enough to meet the views and approval of the people and compare favorably and consistently with the laws of neighboring states and show that it vouchsafes to our citizens the same privileges that are accorded in most if not all parts of the United States, there should be, and I believe there will be, no difficulty in bringing about this legislation at the next meeting of our legislature.

Dr. C. L. Babcock:

In advocating a per diem compensation to the board I did so purely on the basis that if we paid the board we could demand better service.

Again, in regard to the question of unlicensed dentists: Our law is in some respects contradictory. In one paragraph it provides that men who have served for five years as apprentices may come up for examination; in another paragraph it practically prohibits any man without a license from performing dental operations.

Now it seems to me that paragraph of the law would prevent absolutely any man conducting a practice at the chair, even in a licensed practitioner's office, if he did not have a license himself.

But I will say this: The committee that framed this law originally said nothing in the original draft of the law about apprentices. That was put in afterwards, I think, at the suggestion of some member of the legislature. I believe that law, without reference to the apprentice, would have prevented any man from coming up for examination without a diploma from a dental college, and I am not prepared in my own mind to say that I approve of that. I feel that the field ought to be left open for a man who has the ability and determination, even though he can not go through college, to have the privilege of going before the board for examination. But that is another question. The point which I wanted to call your attention to was that the law as it stands today seems to be contradictory on that subject.

Dr. J. J. Wright:

Gentlemen, relative to the finances of the board I will make a little personal statement: I was on the State Board of Dental Examiners just three months when I was elected secretary of that board and was compelled to go to the bank and borrow $350 to meet a deficit of the accounts that had accumulated previous to my entering upon the board. I agree with you most heartily, gentlemen, in your sentiment relative to the subject of late reports of the board to students who take the examination. I believe in many cases it is a hardship. Very often they feel it keenly, inasmuch as they have opportunities to establish themselves and cannot take advantage of them. You know a young man is always keen to go to work. But under the present system you must realize that it takes a week and sometimes ten days and twice a year; that is, you can figure conservatively on two weeks a year spent in your actual examination; then working hard in your office all day and having a pile of examination papers staring you in the face every night; some of them very difficult to read, and some of them difficult to master, whether or not you are able to give that man the proper credit as to his standing on a certain question you have put. Gentlemen, it is all a grave responsibility. You can very easily do a young man a great injustice. Those things must be done carefully and slowly in order that no mistakes be made. I will not say there are not mistakes made, but those things have got to be done conservatively, so as to eliminate as many mistakes as possible.

Dr. French spoke of the educational feature, that it was not necessary. I will agree with him that "many are called, but few are chosen," in all our professions who are eminently qualified to fill their chosen calling. But, gentlemen, if you will properly educate a man before allowing him to come into your profession you have at least got the opportunity to make a gentleman of him, who will command the proper respect of the community, and who will have the bearing that you would like to have represented in your own town and vicinity.

DISCUSSION OF DR. FEDERSPIEL'S PAPER, "MOUTH BREATHING, ETC."

Dr. Warren B. Hill:

It requires some temerity on my part to discuss this paper in an impromptu manner. I have been deeply interested in the contents of the essay and I wish that many of my colleagues could have been present to hear this paper, but I would much rather discuss it before practitioners of medicine than doctors of dentistry, because I could more easily point out to them their duty. This paper is a plea for the early correction of facial deformities—the development of a good handsome face—from that point alone there is reason enough that this subject should be brought before your body and the attention of the people be called to its importance. I should have been pleased to have seen the whole room filled with the people of La Crosse, especially the women who have children, in this community, that they might have heard this paper and that they might appreciate more fully the obligations that are resting upon them; the care of their children's teeth, the development of their faces and the correction of irregularities, because the child has a right to have as good looking and intelligent a face as can be produced for him. But, there is another side to the question that is of far greater importance than that, the question of mouth breathing. A high arch obstructs the nose and is conducive to the growth of polypi and to malformation of the nasal bones. This in turn produces other conditions and other nervous manifestations, and to think that in this age of prophylactic medicine we pass by these causal factors without paying any attention to them ourselves or calling the attention of the parents to the ultimate results is indeed astonishing. Malformations that throw the teeth out of articulation is a matter that should interest the doctor of medicine and the doctor of dentistry alike, for malarticulation not only hinders nutrition and impairs mastication, but is productive of many nervous diseases which are hard to diagnose and treat. These are subjects that we in our profession turn to you for elucidation and education and I hail the day when the two professions shall study these questions side by side. In regard to the etiology and treatment of these early deformities, we should not lose sight of the fact that poor nutrition and poorly fed nerve cells are causal factors, and while we are mechanically broadening the arch and correcting the occlusion we should at the same time tone up the nutritive system and build up the nerve tissues. This requires the constant attention of both the specialist in dentistry and the practitioner in medicine.

Dr. R. J. Wenker:

I am glad of an opportunity to discuss the subject of mouth breathing, as it is a phase of orthodontia which I have been deeply interested in for quite a number of years, and I think a subject that every practitioner should take considerable interest in, for the reason that the treatment of these cases is essentially of two kinds, the preventive treatment and the corrective treatment. Many cases come to the hands of the general practitioner for preventive treatment. They come to his hands for care, for guidance during the "danger period." I may say the growing period. The growing period of the child is the danger period whenever any abnormal condition may take place. The habit of mouth breathing is the result of necessity; that is to say, there is some respiratory obstruction that compels the child to breathe through the mouth instead of through the nose. It was about in the years 1868-1870 that William Mayer of Copenhagen first called especial attention to adenoids, and he gave them the name of adenoid vegetations. He describes them as the crystate adenoids, which are generally located in the upper posterior part of the pharynx, where the soft palate closes against the posterior wall of the peroneous, so that they give principally a nasal obstruction; and a second kind, which he calls the cylindrical adenoids, and they are located a little lower in the pharynx, on the lateral wall, and do not offer so much obstruction to nasal breathing as they do to the passage of air through the pharynx. Therefore I would, in the beginning, attribute this habit to a result of respiratory obstruction. There are principally two classes of deformities resulting from mouth breathing, the kind referred to by the essayist, in which the head is thrown back, the lower jaw down and back, the tongue instead of locating within the upper arch is located within the lower, and we have a narrow upper arch, protruding, and a receding or retruding lower arch, a diminutive lower jaw. I think we can trace the cause of that—perhaps I better say we can trace the principal factor in the cause of this to the crystate glands located in the posterior nares, obstructing the nasal breathing. The other deformity, which has not been spoken of, if I heard things rightly, is a diametrically opposed deformity, with the lower protrusion instead of the upper. Now at first thought it may seem impossible that we could have two diametrically opposed deformities from the same general cause. I have had two cases in practice, and I find in my readings that Dr. Victor Hugo Jackson also has had experience of this kind, and gives mouth breathing as being an important factor in the cause, in his opinion. The only explanation that I can offer for this deformity is that the cylindrical adenoids located in the pharynx are offering obstruction to the breathing more than in the nose; that instead of throwing the head back, the lower jaw down and back, with an effort, as it were, to straighten out the air passage, to take out the bend at the throat; instead of that position the patient tries to widen the pharynx anteriorly and posteriorly; to open it he throws the lower jaw forward and the tongue forward, so as to enlarge the pharynx and give a freer passage of air. Then, too, this is accentuated if the tongue is hyperthophied. The tongue, lying within the lower arch, its pressure upon the teeth has a mechanical influence in expanding the lower arch. In this expansion and protrusion, until the lock is broken, there is another and a minor factor that is operative, and that is the natural tendency that the mandible seems to have of growing forward. You have all noticed the tendency in edentulous jaws; how the lower jaw will sometimes protrude in spite of you, when trying to take a bite; how difficult it is to get a normal bite. The lower jaw will protrude, and it does grow forward more when there isn't that check or interference of the lock. The simple resistance of a set of artificial teeth is sufficient to prevent this normal tendency of growing forward.

Now I will go back just a little. There were one or two factors that I forgot. Mouth breathing is sometimes complicated by rachitis. Dr. Jackson gives it as his opinion that malnutrition—as was referred to here by Dr. Hill—is probably an operative cause in bringing about the entire chain of symptoms, of abnormal conditions, such as hypertrophied lymphoids or adenoids, hypertrophied tonsils, etc. Malnutrition can only be the underlying factor in this particular perhaps in this way: Malnutrition naturally will affect the the chemical constituents of the secretion. The complex compounds in the secretions, as was pointed out by Dr. Kirk, and the effect of the secretions upon the tissues, affect the nutritive supply, and when you affect the nutritive supply you inhibit the growth of the tissues. The tissues, the bone, the size of the sinuses, the maxillary, the ethmoidal, the sphenoidal, the frontal and all of the sinuses tributary to the nasal passage, as well as the bone, are diminutive in childhood, and this inhibitive influence upon the sinusés and bones naturally will interfere with the development of the bones, the expansive development particularly. Now, then, rachitis will have its detrimental influence, in that the bone is less hardened. I think that one authority holds that about 30 per cent of children suffer more or less with rachitis, and the effect of the muscles, as has been pointed out, upon the upper arch, when the lower jaw is dropped—the tension of the muscles is increased and the effect of the rachitis softening the bone naturally would help to aggrivate the condition. It is a bad complication.

The early removal of adenoids, as has been suggested, is a highly important thing to do, and it is in this stage that many cases are in the hands of the general practitioner, where he must guide the mother in having the proper attention given to the child during the developmental process.

Dr. M. N. Federspiel:

Gentlemen, as the hour is late, I will simply say that I thank you gentlemen who have so ably discussed my paper, and for the kind attention given it.

Relative to Dr. Wenker's statement with reference to mouth breathing being a factor in causing the lower jaw to protrude, I agree with him.

THE DENTAL COLLEGES OF AMERICA.

Dental Department, Wisconsin College of Physicians and Surgeons, Milwaukee, Wis. First Class Graduated 1900. Total Number of Graduates to January, 1908, 43.

Dental Department, Marquette University, Milwaukee, Wis. First Class Graduated 1895. Total Number of Graduates to January, 1908, 305.

THE DENTAL COLLEGES OF AMERICA.

Royal College of Dental Surgeons, Toronto, Canada. First Class Graduated 1876. Total Number of Graduates to January, 1908, 1,027.

School of Dental Surgery, Laval University, Montreal, Canada. First Class Graduated 1905. Total Number of Graduates to January, 1908, 18.

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EDITORIAL.

INCREASING GOOD FELLOWSHIP IN THE PROFESSION.

That a better feeling exists among dentists generally than ever before in the history of the profession no one can doubt who has carefully studied the situation. This is particularly true of practitioners in the smaller cities and towns, where in the past the subtle god of jealousy and discord seemed most prone to take up his abode and harass the lives of men. Today there is more liberality, more charity one for the other, with less bickering and backbiting. There is even a chuminess among dentists of the same locality which is really delightful, and which tends more than anything else to make professional life worth the living.

It would seem a perfectly natural and proper thing that men engaged in the same pursuit, with common objects and aims, should fraternize and compare notes, that they should be helpful one to the other; but in the past we have frequently seen the reverse of this. The professional lives of many men have been embittered and their happiness destroyed through petty spites, misunderstandings, jealousies and discords, which eat like a canker into the mentality and even into the physical well-being of the individual.

It is not quite to be expected that all of this has been entirely done away with in the profession, but there is really such a very great change in the past few years that it is strikingly noticeable. The reason for this is not far to seek. There is of course a broader charity for the opinions of others developing among men of all classes, but the chief motive power of increasing harmony in the dental profession may be traced directly to the influence of local societies. Wherever a local dental society has been established it has almost uniformly resulted in a better feeling in the locality. Men do not really quarrel very much when they get to know each other well. It is usually the misunderstandings generated by petty gossip which bring about the estrangements among dentists practicing in the same place. And much of this is prevented by the intimate association brought about by local meetings. Men get to know each other when they sit together at the same table at a monthly dinner or meeting, and they soon discover excellent qualities in each other which they never dreamed of before.

Every town with two or more dentists should have a local dental society. Of course the larger societies are necessary for state or national purposes, but the greatest real good to the individual is done by the small local society. It is here that he learns the things he wants to know in his practice—the things he can apply to his every day work. And it is here, more than any other place, that he learns to form a just estimate of the good qualities of his fellow practitioner. Men develop through good fellowship, but they become stunted, dwarfed and strabismic through isolation and jealousy. Let the local society thrive and the profession will advance as surely as cause produces effect.

THE EDITOR'S DESK.

A VACATION ON TIRES.

(CONTINUED FROM NOVEMBER DENTAL REVIEW.)

At every little garage through the country you will see the legend, "Open at all hours," but if you want your car before seven in the morning you will have to whistle for it, and then not get it. And some of these "garages" are little better than shacks or sheds. I think it was the Collector who suggested that they would be better called the "garbage." The cost for storage over night varies from $1.00 down as low as 40 cents. This latter sum we paid in Toronto, Canada, where our car had the most careful attention of any place on the trip.

The second day out we ran to Dowagiac (whoever invented that name has my admiration for his ingenuity—such a name can never be forgotten and is an advertisement in itself), then to Decatur, and Paw Paw, where we had dinner. Of course it was not dinner time, but that never made any difference to us—we were always hungry.

From here to Kalamazoo the roads were good, but between Kalamazoo and Battle Creek we tried on several occasions to hire some one to swear for us. It was on this stage of our journey that I made a most important discovery. I had never realized before how many things I was in the habit of doing with my thumb nail, but I found out, and I have respected a thumb nail more ever since. Fritz had stopped the car and said he knew we were on the wrong road. I jumped out and looked over the situation and voted with Fritz. "Anyhow," said he, "I am going to back out of this and take that other road." The track was too narrow in which to turn around, and I said to Fritz that he would never back Betsey out of that in a month of Monday noons. The wheels were sunken in the sand almost to the hubs and the drip pan nearly scraped the ground. "Back her!" he said. "I could back her up a telegraph pole if it was sheeted with ice." Betsey was mad, I could plainly see that; she was mad through and through, and I sympathized with her. As Fritz put on the reverse lever the boyish impulse born of the days when I was accustomed to helping lift a wagon wheel out of a rut seized me, and I foolishly grabbed a spoke on the rear wheel. What happened any individual with a "lick o' sense" will know without being told. Betsey snapped at the bit and sent those rear wheels spinning, nipping my thumb between the spoke and a nut on the brake-drum. Needless to say I took my thumb away from that particular region of the car, and I did it without any unnecessary ceremony. When the girls saw the blood spurting they got busy. So did I. It was a sort of cross between a jig and a bear dance, and there wasn't anything of me but thumb for a few minutes. When I got off my glove—all that was left of it—and saw my thumb nail lifted so I could look under the wrong end, I sat myself demurely down on the road side. And then I lay myself demurely down on the road side, and I didn't seem to care whether I mussed my clothes in the dust or not. Auntie came running with a small bottle of wine, which I didn't know the little rascal had, and she saved my life. Honestly, I didn't stop to think at that moment whether I belonged to the Prohibition party or not, and I didn't care. The Mater was fanning me and it was almost worth being hurt to receive the attention I did. When I was in a condition to "sit up and take notice" I got some antiseptic from my grip, pressed the nail back to place and dressed the thumb as best I could. The only available cotton we had was some in a small cushion or bandage covered with linen, and we had no scissors to cut the covering, but the Collector solved the difficulty by ripping it off with her teeth. That girl is always "Johnny on the spot."

By this time Fritz had Betsey out of the sand and we started on a new road, only to run within the next half hour into the worst hills we had encountered yet. I began to have more and more respect for Betsey when I saw what she could do, and I promised never to feel her pulse again with my thumb. But one of these hills was almost more than I bargained for. It was not only very steep, but at places the embankments were alarming. As we neared the top we encountered a place where there had been a washout, and the rise for a short distance was almost perpendicular. I said to Fritz, "She will never make it; no car on earth can go up over that," and for one instant I was genuinely terrified. But Betsey simply raised up on her hind legs and walked over the crest of the hill without a falter. At the top we stopped to let Betsey cool off a little and to get our own breath. There was a farmhouse nearby and the girls went in for a drink of water. The farmer asked if we came up over the hill, and on being answered in the affirmative he declared it was too dangerous a place for automobiles, and said that the night before a party nearly went over the embankment. There were some ladies in the party and he could hear them scream with fright half a mile away. When you start out over a strange road in an automobile you never know what you are to encounter.

We reached Battle Creek safely and went through without stopping, but my thumb began to have notions of its own about the position in which it wished to be held, and by the time we approached Marshall it was deemed expedient to stop for the rest of the day and over night. There was no public garage, but a neat little private barn was placed at our disposal for Betsey, and we were made comfortable at the hotel. "Simon says thumb's up" on a pillow most of the night, but by morning the worst was over and we started out about 8:30 o'clock. We found it impracticable to make very early starts on account of caring for Betsey and getting the girls ready, and after I hurt my thumb we were still more handicapped because I couldn't button any more shirtwaists down the back. In this connection I would like to ask if any persevering individual has ever taken the time and trouble to count the buttons on an average shirtwaist? I should like to be informed on this important matter, not necessarily for publication, but just to estimate how much of the other fellow's time is consumed in lending a helping hand. The party who conceived the idea of buttoning shirtwaists down the back contributed much to the sociability of domestic life by developing a delightful interdependence one on another, but the one who suggested fourteen buttonholes to the inch overdid the matter. Even the best of thumb nails will wear out.

Shortly after we left Marshall that morning Betsey began to behave badly. The sand and hills of the day before seemed to have soured her temper and she was as cranky as a middle-aged cook on wash day. We stopped and tried to coax her with cylinder oil, hard grease and persuasion. But she was for all the world like a bucking bronco, and would rush at the road one instant as if to eat it up and the next she would sag back and sulk. I almost began to have my doubts about Betsey and was even guilty of saying to Fritz, "What this car wants is a 'shover' instead of a chauffeur." We had worried along with her in this way for a longer time than I care to tell when Fritz ran her up under a tree beside the road, stopped, expectorated meditatively and remarked with subdued seriousness, "I am going to find out what is wrong with this machine before we go another inch." We raised the hood for what seemed to me the hundredth time and both stared glumly at the engine. "She looks innocent enough," said Fritz—"hold on!" he exclaimed a moment later, "I don't like the appearance of that one spark-plug." We removed it, put in another, got in the car, and, presto! We couldn't hold Betsey with a curb bit! She struck out at a two-minute clip and kept it up, and for once Fritz did some reckless running. We had not gone ten miles before I half wished we had another fouled spark-plug so I could gather my breath, but really it did seem delicious to spin along at such a rattling pace when we had been limping so long.

That day we ran through Grass Lake, Chelsea, Ann Arbor, Ypsilanti—the road between the two latter places was like a polished pearl-top table—Detroit, and on to Mount Clemens for the night. I had heard a great deal about Mount Clemens, but had never been there, and it took me only five minutes to learn what it's real virtues are. People are said to go there on crutches and walk away without them, and I am prepared to believe it. The smell of that place would make any self-respecting citizen get up and walk away from it in his sleep, and he wouldn't stop to wait for his crutches, either. No matter how weak he was when he came, the smell is strong enough to lift him bodily out of it. Talk about aeroplanes—if you should liberate one in the vicinity of Mount Clemens it would soar aloft on sulphuretted hydrogen till it bumped its nose against the moon or caught its flagstaff on a comet's tail. They explained to me that it was only when they were filling the baths that it was so very bad, but they must have been working overtime at the baths while we were there. That night they serenaded our hotel with a band and Fritz was rather nervous for fear they should call him out on the balcony for a political speech.

In the morning before we started I had some fun with a farmer in front of a grocery, where we had stopped for some gasoline. He was typical. His straw hat was wide enough to just comfortably pass through a barn door, but it was turned up at the sides to make navigation feasible, and pulled down over the back of his head to balance his brain. In common with the owner it had seen better days. The old fellow had lost all his lower teeth on one side of his mouth to the lateral incisor, but instead of an artificial denture he wore tobacco to fill the space.

"Them things," he said, pointing spitefully at Betsey, "otter all be burned." I nodded my head cheerfully, as if I believed every word he said. When I find a man in the mood this one was in I always aim to agree with him. Encouraged by my acquiescence, he launched forth: "W'y down to Detroit one time"—he spoke loudly so everyone would know he had been in Detroit—"one o' them blame things come nigh runnin' right over me. I was standin' on the corner of Jefferson avenue"—he emphasized Jefferson avenue as if it were a household word with him—"when along come a thing like that, and if it hadn't been for a p'liceman I'd been a goner in another minute."

"Policemen *are* sometimes an awful nuisance," I remarked.

"Nuisance!" he snorted. "Didn't I tell you if it hadn't been for him I'd been kilt?"

"Oh," I answered, apologetically, "I didn't quite understand. The trouble lies with the drivers—they are so careless," I remarked.

"Drivers! I wa' n't drivin' at all. I was simply standin' on the road. How could drivin' help a thing like that?" Our relations were evidently becoming slightly strained.

"I meant the drivers of automobiles," I said. "They are usually such a reckless lot of fellows. They ought to be drawn and quartered, and pilloried, and guillotined, and electrocuted. They ought to be all placed on the highest pinnacle of Pike's Peak and flicked off into the nethermost depths of perdition and negation." He didn't understand a word I said, but somehow he seemed appeased.

"What ought'er be done," he said, again pointing with a knotted finger at Betsey, "is to take every one of them things out in a vacant lot and pile 'em one on top of another and set fire to 'em. That's all they're good for."

"Yes," said Fritz, "that would be easy. There are only about a million in use and it would be a simple matter to pile them up. And what a bonfire they would make. If you will just set a day we will come over and begin."

The old man snorted disdainfully, deposited a pancake of tobacco juice on the sidewalk and shuffled off up street.

(TO BE CONTINUED.)

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

My Dear Mr. Editor:

Those in the metropolitan district who did not avail of the invitation sent out by the First District Dental Society to attend their meeting at the Academy of Medicine, November 10, missed a very interesting meeting. Dr. Edwin T. Darby, of Philadelphia, whose serious and intense personality at all times thralls us, read a paper and asked the question: "Would the Medical Degree Add to the Professional standing of the Dentist?"

The members of several other dental societies about New York, such as the Odontological, the Second District and the combined societies of New Jersey, were invited, which swelled the attendance to fill the large auditorium in the Medical Societies building.

Dr. James W. Taylor presided. Dr. Darby expressed the opinion that dentistry is not a specialty of medicine but a special profession in itself. He also said that early in the career of dentistry some who intended practicing took medical degrees, and those men were instrumental in founding dental colleges.

From my understanding of Dr. Darby's remarks I believe he is in favor of the broader education possible through acquiring the medical degree, and that the public seems to think that the medically educated man is better qualified.

That the degree of medicine could help the holder socially more than one in possession of the dental degree he did not believe, for individuality and personality were far greater passports in the social world and men are recognized for what they are.

As a whole Dr. Darby's paper was so logical that the speakers who followed all applauded his sentiments.

Dr. S. G. Perry, one of Dr. Darby's ardent amirers, said that the paper was not discussible from a critical standpoint; that it was not possible to escape the logic of it. It was unanswerable. He too said that one's social position depends upon the man; that position is made outside of all social attributes. He believes that no profession conduces so much to culture and development as our profession, because our patients generally are in a healthy state of mind quite different from the condition the medical man finds his patient as a rule.

Dr. Perry cited some of the history of his career which he began in the office of a medical man, but noting the uncertainty and the general groping in the dark, he concluded that that calling was not the right one.

He tried surgery, but that had too many horrors and sufferings, so he was obliged to give that up.

He eventually went into a dental office, which he immediately found was the right sphere. He said that if he were educating a son he would endeavor to give him as a foundation an education in one of the universities, then a medical or a dental degree. The medical he considers the most noble in the world, but the most exacting. He closed with an eulogy of Dr. Darby, saying that he was good New England common sense applied scientifically.

Dr. Swift, who was called upon, believes that a medical degree would add to the standing of the dentist; that the public would consider that the holder had a broader knowledge. He believes too that dentistry is a collateral branch of the healing art.

Dr. C. S. Stockton said in his remarks that much of the opinion of dentists has drifted down from tradition. The conditions of the past have prejudiced the community. He cited an instance where a blacksmith who thought because he had the ability to weld iron bars successfully that there must be more money in welding gold gave up his former occupation and hung out his sign as a dentist. Men from many other vocations in life have done the same thing. Of course, today this is not possible.

Dr. Wm. Jarvie, even though he has retired from active practice, retains quite an active interest in our society affairs. He was present upon this occasion, and in his remarks said that the M. D. degree does indicate something. To qualify for it requires a higher entrance examination and the course of study is four years.

Dr. M. L. Rhein said that he did not know that Dr. Darby was going to take as a text for his remarks for this evening his paper which was read before the American Medical Association.

He thinks that there has been a tendency to under-value dentistry. No greater privilege exists than the preventing of disease as do dentists. Dr. Rhein made an excellent point in arguing for the lengthening of the college course of dentistry. He said our present standard was simply opening our doors to the reception of such men as the medical colleges refuse. His plan would be to have the student take up medicine. During the period of enforced idleness of three or four months summer season, which enforced idleness he thinks is a crime against the student, because the teacher cannot stand the strain, he would have the student take up the practical dental course. He did not believe that say eleven months continuous application would hurt any student. As to the professors there should be dual positions for them. The great value of the medical training is the ability to diagnose properly.

Dr. Shamberg spoke of the need of an advanced step. He considers that there is very little difference between the ophthalmologist and the dentist in the practice of specialties of medicine, except that the one receives his training in a medical institution. But because the dentist has started in wrong we should not continue wrong.

Dr. G. A. Mills asked for the privilege of the floor which was granted. He began his talk by saying that Dr. Rhein expressed some real common sense and he applauded him for his remarks. Dr. Mills holds that there is a much larger field for dentistry. He referred to Drs. Atkinson, Varney, Webb, Dwinelle, Abbott and a host of others who did not spare themselves to make dentistry. He spoke of his admiration of Dr. Smith for what he has done and for Dr. Kirk and others.

Our tenderness and kindness were aroused when he referred to his seventy-seven years, more than fifty of which have been passed in practice. His time has almost passed for work, but he said "I'm alive in my thoughts, and they crowd in on me thick and fast and they are better, more mature, than ever." He sees the time fast approaching when the young men will be called upon to do things far in advance of those we are doing.

Dr. Darby concluded the session by hoping that he had not undervalued the advantage of a medical degree, but the value is in the medical education. He does not agree that the student could work eleven months. In fact, after one or two years under the present system he is ready to collapse. He believes that dental practice saves more suffering than medical practice cures. Another advantage of the medical degree is that the law protects the medical practitioner but not to the same degree the dentist.

Preceding the reading of the paper Dr. Walker outlined the work of the new idea established by the First District Society, known as the "Section in Orthodontia," which is a class formed for the purpose of instructing in a practical way in the various systems those who wish to become members. The classes commence in October and continue every Thursday evening at the College of Dental and Oral Surgery, but under instructors brought together by the First District Society. The fee for the course is twenty-five dollars. The treasurer is Dr. James W. Taylor, 106 East Fifty-seventh street.

Dr. Walker said further that the society was endeavoring to find a few young men who would qualify in materia medica. The society would equip a complete laboratory for the purpose of experimentation and the advancement of the science. The funds are ready for the purpose of establishing and carrying on this grand work.

Dr. Hasbroeck, one of New York's specialists in extraction, had a fatality under the administration of nitrous oxid gas not long ago and under "incidents of office practice" he was asked to say something to the society about this occurrence. He told us that the man had given a history of some heart lesion but nothing very unusual. He had administered gas for the extraction of a number of teeth, but before the operation was completed the patient gave evidence of returning consciousness, so the hood was applied to further anesthetize when suddenly the breathing ceased.

They worked over the patient for an hour or more trying to establish respiration artificially, and by the administration of strychnin and other drugs endeavored to stimulate the heart, but to no avail. No autopsy had been made, so the real cause of death could not be positively ascertained, that is, whether the heart or the lungs stopped their functions first. THE BURROUGHS.

BOOK REVIEWS.

HUMAN PEARLS.—By Francis Eaton Burnett, D. D. S. Chicago, 1908.

This is a beautiful little volume of 86 pages, aiming to interest readers in the value of the natural teeth and the means to pursue in order to preserve them. It is full of good suggestions and would be of benefit to every mother with little children committed to her care. The evils of the loss of the first permanent molar are well emphasized in the text and also by illustrations. This particular subject cannot be too forcibly brought to the attention of those in charge of a growing child, and every means should be employed by the profession to teach the lesson. The illustrations in the book are excellent, and one of them in particular instantly catches the eye of the lover of children. It is a picture of a bright little boy in the act of brushing his teeth, and it is really a work of art. The mechanical make-up of the book is beyond criticism, and it is a most dainty little volume to pick up aside from the instruction it offers.

PRACTICAL HINTS DEPARTMENT.

Edited By G. W. Johnson, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, The Dental Review, 55 State street, Chicago, Ill.]

To Keep a Hypodermic Needle from Rusting:—When we buy the needles they are provided with a small wire inserted in the needle. Replace this with a coarse hog's bristle or one from a large paint brush when the needle is not in use.—*P. J. Pegan, Lebanon, Ill.*

Convenient Broaches:—Instead of using a small handle, have had a great deal of success in instructing assistant to soft-solder on old instruments of different angles. Such instruments are always at hand, disinfected, and easily applied.—*W. M. Cooper, Frankfurt, Germany.*

Detecting Moisture in Investments for Inlays:—A sure way to determine if the moisture is all driven out of the investment for gold inlays, during the preliminary heating, is to place the investment, sprue end up, on the zinc top of the work bench, and if any moisture remains in the investment a round, moist spot will show on the zinc.—*C. B. Plattenburg, Chicago.*

Enlarging Root Canals With Broaches:—I have almost given up enlarging root canals with broaches, having found difficulty in knowing how far to go. The great difficulty is presented by the fact that with the broach there would be a little bur or shoulder past which one would not be able to penetrate, and lose track of the depth of the root canal.—*Charles Monk, Wiesbaden, Germany.*

Method of Manipulating the Tooth Brush—After some years of experience I advise patients, after charging the brush, to begin with the lingual surfaces of the anterior teeth and afterwards the buccal surfaces of the molars, and then the upper and lower anterior teeth. After the brush, advise silk charged with a paste made from the same tooth powder. The method is recommended to avoid the friction caused from beginning with the upper lateral teeth.—*A. Chiavaro, Rome, Italy.*

Proper Treatment of Roots:—Fixed bridges, or attachments of any kind, are wholly dependent upon the correct treatment of the roots of teeth supporting them. I think that a tooth had better be extracted at once than improperly treated. This is the key to all successful partial restorations, whether removable or fixed, because the removable as well as the fixed is dependent on the condition and permanency of the roots.—*C. N. Thompson, Chicago.*

Cleansing the Teeth:—The problem of cleansing the teeth was comparatively simple. The two indispensable ingredients were precipitated chalk and soap. It is necessary to find a soap which would not only act as a lubricant, but should also have a high solvent power for fat, which should be compatible with disinfectants and serve as a medium for binding these together, and which in itself is sterile. It must be expressly manufactured for this purpose.—*N. S. Jenkins, Paris, France.*

Occlusion of Artificial Teeth:—The occlusion is one of the most important things in artificial teeth. I was so unfortunate as to have my upper teeth all knocked out, and I am wearing a plate in the upper jaw. When I had made the occlusion as well as I could by touch paper and the stone, I took carborundum into my mouth and completed it by grinding the carborundum, and I have an occlusion that is just as smooth and just as perfect as the occlusion of the natural teeth.—*G. V. Black, Chicago.*

Root Canal Treatment—More than one-half of the pulp canals treated become well in spite of the treatment and not from it. With regard to drilling out canals, personal experience leads to the thought that in certain cases, where it is possible and feasible, it is a wise procedure. In cases where it is not possible I rely upon thorough desiccation and flooding the canal with formol, and vaporizing the formol with hot silver or copper wire. It is the vapor of formol that disinfects.—*G. B. Hayes, Paris, France.*

Painless Pulp Devitalization:—After removing the superficial leathery decay from the cavity with a spoon excavator, use arsenical fibre moistened in eugenol, place a cardboard disc over this to prevent the cement from causing pressure on the dressing, mix cement to a creamy consistency, allowing it to drop from spatula and adjusting itself in the cavity. The eugenol is an anodyne, with anesthetic properties, very penetrating, and there is seldom any pain while dressing remains in the tooth.—*LeGrand M. Cox, St. Louis, Mo.*

Preparation of Impressions and Models:—To scrape the impression of a uniform thickness, not too much nor too little, is a very unsatisfactory performance. On the other hand, with the jaw before you, a "relief" of ordinary base plate wax is easily applied and of uniform thickness. This should extend nearly to the margin of the ridge, as it is very hard there. The relief should cover as much of the hard surface as possible, not extending at the sides to the soft tissue. As to scraping for the soft tissue on the model, that is uncalled for, because all that is required is for the plate to come in contact, not to press upon it.—*L. P. Haskell, Chicago.*

Enlarging Root Canals:—To enlarge a root canal the dentin must be cut away. The shavings are supposed to be removed entirely by the frequent withdrawal of the drill, chip blower or the syringe. It is not sure that fragments of dentin, no matter how fine, will be crowded against the foramen and create a source of infection. Any dentist would consider as criminal the commencement of enlarging a canal to prepare it for a pivot, before having closed the foramen either by gold, tin, cement or gutta-percha. There should be no difference between the procedure with a narrow root and the preparation of an incisor for pivoting. For these reasons drilling into a narrow root canal should be avoided.—*Wm. Hirschfeld, Paris, France.*

To Strengthen a Bridge:—Posterior bridges with barrel crowns for abutments are subject to frequent breakage, the bridge body being detached from one of the abutments. To strengthen the crowns some solder a band of gold plate around them. A much better and easier way is as follows: Cut some 22-k. solder and form a band covering the whole surface facing the space for the dummies and about one-third the width of the remaining surfaces of the band of the crown. Prepare the band of the crown with borax and place the band of solder in position, and attach in a bunsen flame. As soon as the solder begins to flow remove from flame and strengthen the cusps with 18-k. solder. The whole procedure takes about two minutes and produces a nice contour on the crown requiring little finishing, and it acts as a starter at the final soldering, insuring a perfect joint between the facings and their abutments, which otherwise is often not the case.—*M. A. Gottlieb, New York, N. Y.*

Cement or Gutta Percha:—In article after article we see cement advocated as a more preferable stopping than gutta-percha, its adherents claiming that it can be adjusted over treatments without pressure being exerted on the same. This seems to me to be a bugaboo for two reasons: First, by bridging over your treatment, leaning a piece of gutta-percha from the floor of the cavity to one of the axial walls, you can then pack softened material of the same kind over and around this without danger of pressure; secondly, you find patients coming to you by the score with teeth, the putrescent contents of the root canals being unprotected from the pressure of a cavity filled with various kinds of food-stuffs, yet they have been in that condition for months without trouble resulting from the stress exerted by the mastication of food. It seems to me that the 75 to 100 pounds pressure that is exerted by the masticatory muscles, and that seems to me a low estimate even for a child, would cause more trouble than the 15 pounds pressure that the average dentist seldom exceeds.—*H. E. Latcham, Grand Junction, Iowa.*

MEMORANDA.

IDAHO STATE DENTAL BOARD.

Idaho State Dental Board will meet in Boise, December 28, 30, 1908. Applicants must bring operating instruments and engine.

E. L. BURNS, Secretary, Boise, Idaho.

DENTAL WORK FOR OCTOBER IN THE ILLINOIS EASTERN HOSPITAL FOR THE INSANE.

Plates, 0; gold fillings, 1; gold crowns, 5; porcelain crowns, 1; cement fillings, 1; amalgam fillings, 41; treatments, 21; extracted, 659; cleaned, 6; roots filled, 17.

GEO. A. MILLS.

DR. JAMES CLINTON FLEMING.

Dr. Fleming was so terribly burned by an explosion of gasoline at his residence, Durand, Wis., that he died as a result. He was a most esteemed citizen, and his death came as a profound shock to his family and friends.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

Examinations will be conducted by the Board of Dental Examiners of Pennsylvania simultaneously in Philadelphia and Pittsburg, December 9 to 12, 1908. For application papers or any information, address

DR. NATHAN C. SCHAEFFER, Secretary, Dental Council, Harrisburg, Pa.

INSTITUTE OF DENTAL PEDAGOGICS.

The sixteenth annual meeting of the Institute of Dental Pedagogics will convene in the Planters House, St. Louis, Mo., December 30 and 31, 1908, and January 1, 1909. All teachers in dental colleges are cordially invited to attend and take part in the proceedings. An excellent program has been prepared and reduced rates arranged for, particulars of which can be had from Dr. D. M. Gallie, chairman of the executive board, 100 State street, Chicago.

B. E. LISCHER, Sec'y-Treas.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., January 12, 1909, beginning at 1:30 sharp, and continue three days. All candidates must bring appliances and materials necessary to do all kinds of filling, crown and bridge work, and articulate a full upper and lower set of teeth. A recent ruling of the board makes it compulsory with all candidates to have their examination fee of $10 in the hands of the secretary before January 5, and positively no candidates will be received who have not thus complied with said rule.

G. W. COLLINS, Secretary.

NATIONAL DENTAL ASSOCIATION.

At the 1908 meeting, the National Dental Association adopted an amendment making all members in good standing in their state dental societies, or their allied societies, eligible to membership in this association, by presenting to the proper authorities at the regular meeting a certificate signed by the president and secretary of any such society.

Those desiring to take advantage of their privilege under said amendment should act promptly, as the National Association meets early next year, the last Tuesday of March, 1909, at Birmingham, Ala.

Blanks can be secured from the secretaries of the various state dental societies or the undersigned. H. C. Brown, Corresponding Secretary,
185 East State street, Columbus, Ohio.

RECENT PATENTS OF INTEREST TO DENTISTS.

899,255. Dental casting machine. H. G. Maize, Philadelphia, Pa.
899,626. Tooth-cleaning device. C. P. Schultz, Munich, Germany.
899,853. Covering for barbers' chairs. O. H. Willard, Chicago, Ill.
900,363. Artificial tooth crown and securing means therefor. E. M. Fredericks, Chicago, Ill.
900,541. Dental appliance. E. E. Holmes, Indianapolis, Ind.
901,276. Dental plugger. J. C. Betts, Philadelphia, Pa.
900,812. Dental blower. P. E. Williams, Savannah, Ga.
901,835. Tooth-brush. R. R. Ringer, Pittsburg, Pa.
901,841. Case for tooth-brushes. R. Sewell, Cedartown, Ga.

Copies of above patents may be obtained for 15 cents each by addressing John A. Saul, Solicitor of patents, Fendall building, Washington, D. C.

ALUMNI ASSOCIATION OF THE COLLEGE OF DENTISTRY, UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CAL.

On Tuesday, December 8, 1908, at 9:30 a. m., there will be held at the College building an alumni clinic. The morning will be devoted to clinics, followed by a business meeting, for the purpose of forming a permanent organization. The afternoon will be given over entirely to clinics, and in the evening the faculty will give a reception and dancing party at Goldberg's new hall, to the alumni and students. The clinics will be conducted entirely by the graduates of the university, but other practitioners and the students are invited guests. There will be class meetings, dinners and other social entertainments to make the day a pleasant and memorable one. The dental supply houses will make exhibits. Committee—U. D. Reed, 1900; E. M. Harwood, 1901; J. Walter Gray, 1902; Kate D. Buck, 1903; Roy L. Spencer, 1904; M. M. Dixon, 1905; R. C. Lane, 1906; J. P. Lape, 1907; C. J. Cressmer, 1908.

GENERAL ORDERS NO. 128 OF THE WAR DEPARTMENT.

The following is an order recently issued affecting dental surgeons in the army:

"For plate work or for the filling of teeth of enlisted men the materials supplied by the government will be used and no other, and dental surgeons are forbidden to enter into any financial agreement with enlisted men involving an obligation for payment for silver, platinum, or gold used for filling cavities in teeth, for the construction of bridge work, for the fitting of crowns, the making of artificial dentures, or other dental work."

While we do not ordinarily publish anonymous communications, yet we think the subject of sufficient importance to give space to the following which came to us unsigned in company with a copy of the foregoing order:

Gentlemen—Enclosed find an order just issued by the War Department which should be brought to the attention of the profession at large, especially if the dental corps of the army is to remain a useful branch of the service. Unless the regulation is changed, there is no doubt that the dental corps will be, except in emergency cases, almost ignored by the enlisted men within a few months. Enlisted men will not go to a dentist who is authorized to do only certain kinds of work, and who can use only certain kinds of material any more than they would in civil life go to a physician who was allowed to use only two different kinds of medicine.

The success of this corps depends upon the confidence of the enlisted men, and nothing could more completely have aroused resentment and refusal to receive treatment than the limitations recently placed upon the dental surgeon and the treatment that enlisted men may receive.

Compulsory treatment has been suggested and, in fact, put into execution at many posts, but with the limitations as to materials, would certainly be an outrage, and reflect upon the profession, for the men are constantly changing into civil life, and the majority have never had dental work or service before, as they are educated along dental lines by the corps and receive impressions upon dental service, so will it react upon the civilian practitioner, and he will be judged accordingly. The soldiers are just as desirous of having the proper materials used in every case as are officers, and certainly no one will say that a man can be blamed for refusing to have his front teeth filled with cement or amalgam.

This order will work untold hardship on the men stationed in the Philippines, Cuba and Alaska, where civilian dentists are few, and their prices beyond the reach of the enlisted men. In the Philippines, outside of Manila, there are no dentists, so that men going on foreign service for two years, with a dentist visiting a post every four to six months means the wholesale loss of front teeth.

Under the provision of this order, crown or bridge work can not be done, consequently many teeth that can be saved and made useful will have to be extracted.

Where a soldier has lost some of his molars (which is the case with over one-half of the enlisted men), recourse to extraction is malpractice that in civil life would be almost criminal.

In closing I would like to state that the dental surgeons, most of whom have industriously endeavored to maintain a status that would reflect credit on their corps and the profession at large, feel that regulations like the enclosed one are a reflection on their decency and self respect, and on the profession at large as scientific men.

"MEDICAL INSPECTION IN SCHOOLS."

Under the above head the *St. Louis Republic* publishes the following editorial which is so intelligent and so in keeping with modern progress that it is worthy of reproduction in a professional journal. It is an encouraging sign of the times to see the public press taking up these matters.

"The bill pending in the House of Delegates providing for the medical inspection and examination of school children 'for the purpose of detecting and preventing the spread of communicable, infectious, malignant or contagious diseases,' is a movement rather in the interests of the public health than an effort to improve hygienic conditions among the children and give more attention to their physical well being.

"Supervision of the kind which passes the line of mere health protection is usually received with jeers, given a bad name and heartily damned as an interference with parental functions and duties. A favorite term of denunciation is 'Socialism.' When the Superintendent of Schools in New York urged that the eyes of school children be examined and glasses supplied at public expense, he met such opposition. He replied that it was folly to spend millions of dollars a year for buildings, text books, teachers and apparatus unless the children were able to profit by the use of these facilities. It seems folly to supply books to children who can not read them, or to place them in classrooms when they can not see the blackboard.

"The prevention of the spread of disease, important as it is to the whole community, is not undertaken for the benefit of the children, but of the whole people. The same means, however, that prevents epidemic may be employed in the other direction. The matter is not to be dismissed with a question-begging epithet. It is a matter which may be considered seriously on its merits as an essential contribution to the cause of education.

"Competent inspection in other cities has worked most advantageously and there have been astonishing revealments. In New York City in 1896 the examination of 78,401 children disclosed that there were 29,177 cases of enlarged anterior glands; 1,096 cases of cardiac disease; 17,928 of defective vision; 39,597 of neglected teeth; 18,306 of hypertrophied tonsils. The total number found to require medical treatment was 56,259, or nearly 72 per cent of those examined. Moreover, the majority of these children who suffered from physical disability were backward in their studies—from one to five years behind the grade in which their age would naturally place them.

"We are fully committed to generous maintenance of the public schools. The general diffusion of intelligence is—we are fond of saying on July Fourth—the very cornerstone of the Republic. It is a logical extension of the principle of public education to furnish text-books free. To conserve the physical welfare of the children is a step in the same direction, but not a longer one. Physical defects, the experts give assurance, are the real trouble in most cases which we inaccurately call stupidity, inattention, indifference to study, ill temper, sullenness, malicious disobedience and truancy. The need of the child who can't keep up, who drops out and takes to the streets and to crime, may be whipping, other punishment or the reformatory, but it is more likely to be glasses to correct astigmatism, the removal of adenoids, or the attention of a dentist.

"These are matters for the parent, to be sure, but it must also be remembered that medical treatment is not withheld because it is costly or because the parents are unwilling, but because they are ignorant. If every school system had its physicians to report cases needing attention, much would be done by private initiative to relieve the suffering from eye-strains, from disorders of the digestive tract and the respiratory organs, much to improve the discipline of our schools and increase their general efficiency, much to accomplish the true ends of public education—training our youth to become intelligent and useful members of the community."

"BISMUTH PASTE IN THE TREATMENT OF PYORRHEA ALVEOLARIS AND SINUSES OF THE JAW."

Under the foregoing title Dr. Rudolph Beck of Chicago will contribute to our January number a most interesting and instructive paper. This paste is creating quite a sensation in the medical world and we bespeak for Dr. Beck's article a most careful reading.